# THE ROLE OF IDENTITY STYLES AND ACADEMIC POSSIBLE SELVES ON ACADEMIC OUTCOMES FOR HIGH SCHOOL STUDENTS

by

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ABSTRACT

The present study investigated the influence of identity styles and academic possible selves on academic outcomes for high school students. Specifically, the present study examined the relationship between identity styles and academic possible selves, the relationship of these two variables on academic outcomes, whether the relationship between academic possible selves and academic outcomes was mediated by the strategy time spent on homework, and whether academic possible selves mediated the relationship between identity styles and academic outcomes. Gender and ethnic differences in these variables and the relations among these variables also were examined. This study was conducted on a sample of 1,137 high school students from a variety of public schools across the State of Alabama. Overall, results indicated that the informational and diffuse-avoidant identity styles were related to academic possible selves in their expected direction, whereas the normative identity style was not related to academic possible selves in the full sample. The construct of academic possible selves was related to academic outcomes, however, time spent on homework was not a mediator to this relationship. All three identity styles were related to academic outcomes in their expected direction, and academic possible selves mediated the relationship between some of these variables. Furthermore, girls reported higher levels of an informational identity style, whereas boys endorsed higher levels of a diffuse-avoidant identity style. No gender differences were shown in the relations among these constructs. In regards to ethnic differences, African-Americans endorsed higher levels of a normative identity style than did European-Americans.

Unexpectedly however, the normative identity style was found to be related to academic possible selves for European-Americans, but not for African-Americans. Limitations and contributions of the present study are also discussed.

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I. INTRODUCTION

Adolescence is a period of exploration. During this time period, adolescents begin to question who they are and who they want to become (Erikson, 1959, 1968; Nurmi, 2005). It is also during this stage that adolescents begin to consider serious goals regarding their education, occupation, and family (Nurmi, 2005). Researchers have described engaging in these mental processes as forming possible selves (Markus & Nurius, 1986) and identity exploration (Erikson, 1959, 1968). The present study attempts to examine these constructs through self-reported questionnaires on a sample of high school adolescents. Consistent with the literature (Berzonsky & Kuk, 2005; Boyd, Patricia, Kandell, & Lucas, 2003; Oyserman, Bybee, & Terry, 2006; Oyserman, Bybee, Terry, & Hart-Johnson, 2004) it is suggested that these mental processes may influence how adolescents feel about school and their academic performance. The present study examines the linkages between identity exploration, possible selves, and academic outcomes among high school students. A focus on this age group is critical because it may help researchers to more fully comprehend what factors contribute to the high rates of high school dropout that occur in the United States. Approximately 1.2 million public high school students drop-out of high school each year (Alliance for Excellent Education, 2009; Grey, 2008). Understanding the linkages between the noted above constructs on high school students may lead developmentalists and researchers alike to more fully comprehend this phenomenon.

When adolescents begin to consider expectancies for future education and future career, they are engaging in future orientation. Future orientation is a process that involves thinking

about one's future (Nurmi, 2005). As adolescents think about their future, they also begin to narrow specific outcomes about their future. In other words, they plan what they hope to achieve, what they expect to achieve, and what they want to avoid (Markus & Nurius, 1986; Nurmi, 2005; Oyserman & Fryberg, 2006). Thinking this thoroughly about one's future is described as forming possible selves.

Possible selves are mental representations of what one hopes to become, what one expects to become, and what one fears to become (Markus & Nurius, 1986; Oyserman & Fryberg, 2006). Previous studies, therefore, have referred to types of possible selves as hoped for selves, expected selves, and feared selves (Carver, Reynolds, & Scheier, 1994; Unemorie, Omoregie, & Markus, 2004). These selves may be realistic or unrealistic, and they may be positive or negative (Carver, Reynolds, & Scheier, 1994; Markus & Nurius, 1986). Possible selves are constructed from past and current representations of the self (Markus & Nurius, 1986) and they are influenced by one's social contexts (Oyserman & Fryberg, 2006; Unemori Omoregie, & Markus, 2004) and significant others (e.g., parents, peers, dating partners; Kerpelman & Pittman, 2001).

Concurrently with the formation of possible selves, in adolescence a process of self-definition is taking place (Erikson, 1959, 1968). When adolescents begin to define who they are, their values and beliefs, what makes them different from everyone else, and how they fit with society, they are engaging in identity formation (Erikson, 1959, 1968). Identity formation is a lifelong process (Erikson, 1968; Marcia, 1980) and failure to engage in it can result in identity confusion, a lack of purpose in life or an inability to fit with society (Erikson, 1968, Schwartz, 2001).

Using Erikson's ideas about the concept of identity, researchers developed ways to measure this concept. For instance, Marcia (1966, 1980, 1994) defined identity as an outcome of two processes: commitments, defined as personal investments made in specific domains, and exploration, defined as the pursuit of or experimentation with alternatives that provide information about possible commitments. Individuals can commit without exploring, explore without committing, explore and commit or do neither. With this in mind, Marcia developed four identity statuses: (a) achievement (i.e., making commitments after having thoroughly explored different alternatives), (b) moratorium (i.e., effectively engaging in identity exploration but having yet to make a commitment), (c) foreclosure (i.e., making decisions without engaging in personal exploration), and (d) diffusion (i.e., lack of both exploration and commitment).

Berzonsky (1989, 1990) proposed that individuals use different styles of identity exploration when making identity-related decisions. Specifically, individuals can use an informational identity style (i.e., actively engaging in exploration by informing oneself about different alternatives), a normative identity style (i.e., exploring by learning other's expectations for oneself), or a diffuse-avoidant identity style (i.e., avoiding identity exploration). Individuals may use all three identity styles, but may use one style more often than the others depending on the content. Whereas Marcia's approach defined identity as an outcome, Berzonsky tried to define identity more as a process. The present study assessed identity through Berzonsky's notions of identity styles.

Previous studies have shown that both possible selves and identity are related to academic outcomes. For instance, Leondari, Syngollitou, and Kiosseoglou (1998) showed that high school students with well-defined and elaborated possible selves were more likely to perform well academically than their counterparts. However, other research shows that possible

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selves are linked to academic performance primarily through the use of outcome promoting

strategies like going to class, studying hard, asking questions in class, or time spent in homework

(Oyserman, 2008). Strategies are best described as behaviors individuals tend to engage in to

achieve their goals (Oyserman, 2008). Oyserman, Bybee, Terry, and Hart-Johnson (2004) found

in their one-year longitudinal study that students with positive academic possible selves

combined with academic strategies were more likely to perform well academically by the end of

the school year. Also, Oyserman, Bybee, and Terry (2006) implemented an intervention known

as School-to-Jobs (STJ) aimed at improving academic performance and influencing academic

possible selves on a sample of eighth-grade low-income students. This intervention consisted of

a series of activities that focused on making academic possible selves salient, explaining why

they should be regarded as important, and creating linkages between academic possible selves

and strategies that can be used to attain such selves. Results indicated that the intervention group

reported better grades and better standardized test scores relative to the control group after the

intervention. The intervention group also reported more positive academic possible selves than

the control group and was more likely to engage in strategies to attain such selves. These results

indicate that possible selves associated with strategies can be influential to academic attitudes

and performance. The type of strategy assessed in the present study is time spent in homework, a

known contributor to students' academic performance (Cooper, 1989; Cooper, Robinson, &

Patall, 2006; Keith, 1982; Keith, Diamond-Hallam, & Fine, 2004; Tymms & Fitz-Gibbon, 1992).

Research on identity and academic performance has indicated that both informational and

normative identity styles are positively related to academic attitudes and performance and

diffuse-avoidant identity style is negatively related to these constructs (Berzonsky & Kuk, 2005;

Boyd, Patricia, Kandell, & Lucas, 2003; Hejazi, Shahraray, Farsinejad,  Asgary, 2009). This may

occur because an informational identity style is linked to effective problem solving and thus more effective adaptation to the school environment resulting in better academic performance. The normative identity style, with its emphasis on meeting others' expectations, may promote academic performance if good grades gain the approval of significant others (e.g., parents, teachers). Diffuse-avoidant identity style has been associated with procrastination and avoidance (Berzonsky, 1990, 1992; Berzonsky & Ferrari, 1996, 2009; Schwartz, 2001), both of which predict poor academic outcomes.

The present study attempts to replicate the documented effects on academic outcomes of academic possible selves and identity styles in a sample of high school students. Academic outcomes include academic performance and academic attitudes. Since most research on identity styles have focused on college-aged students, this study also goes beyond replication. ***Consistent with past studies, it is hypothesized that academic possible selves will be positively related with academic outcomes. It is also expected that the strategy, time spent in homework, will mediate the relationship between academic possible selves and academic outcomes. Furthermore, it is hypothesized that both informational and normative identity styles will be positively associated with academic outcomes, whereas diffuse-avoidant identity style will be negatively related with this construct.***

Another purpose of the present study is to examine the relationship between identity styles and possible selves. Currently little research exists regarding the associations between these two constructs. The few that have examined this relationship have focused on Marcia's identity statuses and have found that the individuals in the moratorium and achievement identity statuses reported more possible selves, and those in the diffuse identity status reported the least. The foreclosure identity status was related to optimism that possible selves would be attained

(Dunkel, 2000; Dunkel & Anthis, 2001). From these results, the authors concluded that possible selves are mechanisms of the identity exploration process. The present study looks at the relationship between identity processing styles and possible selves somewhat differently. Unlike the identity outcome-focused studies by Dunkel and colleagues, the current focus on identity processing styles suggests a conceptual ordering where by styles precede and shape the formation of possible selves. However, consistent with Dunkel's framework, it is argued that possible selves are the mechanism of the identity exploration process. In other words, the process of constructing hoped for, expected, and feared selves is an expression of identity exploration. In turn, the strategies used to link possible selves to the outcomes they preview work as if linking goals to desired outcomes. ***From this theory, it is hypothesized that both informational and normative identity styles will positively predict academic possible selves, whereas the diffuse-avoidant identity style will negatively predict academic possible selves.***

In keeping with this logic, it is argued that academic possible selves may mediate the relationship between identity styles and academic outcomes. Possible selves are related to academic outcomes (Leondari, et al., 1998; Oyserman, 2008; Oyserman et al., 2004; 2006) and identity styles are as well (Berzonsky & Kuk, 2005; Boyd et al., 2003; Hejazi et al., 2009). If identity processing styles precede the formation of possible selves, then academic possible selves may act as the mechanism by which identity styles affect academic outcomes. ***Therefore, it is hypothesized that academic possible selves will mediate the associations of informational, normative and diffuse-avoidant identity styles with academic outcomes.***

Sex and ethnic differences are expected in the present study. Past research has shown that girls generally outperform boys academically (Leondari et al., 1998; Oyserman et al., 2004). Girls are also more likely to engage in an informational identity style relative to boys who more

often tend to engage in a diffuse-avoidant identity style (Berzonsky, 1992; Boyd et al., 2003). Regarding ethnic differences, Oyserman, Ager, and Gant (1995) find that European-Americans endorse higher levels of individualism and work ethic, which leads to more strategies being used to attain possible selves. African-Americans report higher levels of collectivism and ethnic identity which leads to more strategies being used to attain possible selves. Using an identity style lens, African-Americans may be more likely to endorse a normative identity style, whereas European-Americans may be more likely to use an informational identity style (*cf.*, Boyd et al. 2003). For these reasons, gender and ethnic differences are anticipated. ***It is hypothesized that the positive association between academic possible selves, informational identity style, and academic outcomes will be stronger for girls, whereas the negative relationship between diffuse-avoidant identity style, academic outcomes, and academic possible selves will be stronger for boys. Moreover, the positive relationship between the normative identity style, academic outcomes, and academic possible selves is expected to be stronger for African-Americans and the positive association between the informational identity style, academic outcomes, and academic possible selves will be stronger for European-Americans.***

# II. REVIEW OF LITERATURE

Just to say that "knowledge is power" is an understatement. It is widely understood that particularly in today's society, getting an education is essential for success. A higher level of education is more likely to lead to a career with more financial gains, more facility in providing for one's family, and other related benefits (Levin, Belfield, Muennig & Rouse, 2007). Unfortunately, despite this widespread awareness, the United States still faces high rates of high school drop-outs. According to Grey (2008), approximately 70% of high school students in the United States graduate from high school with a diploma. If the focus is narrowed to the public school system, only about 52% of high school students in the United States get their diplomas. This leaves an estimated 1.2 million students who drop-out of high school each year (Alliance for Excellent Education, 2009; Grey, 2008). In major U.S. cities such as Detroit, less than 25% of public high school students complete high school (Grey, 2008). In the state of Alabama, only 61% of public high school students graduate (Alliance for Excellent Education, 2009; Leech, 2009). Developmentalists and educators are interested in understanding this phenomenon so that these trends can be changed. A construct that may help us comprehend this phenomenon is "possible selves," conceptualized as self-linked hopes and fears about one's future (Markus & Nurius, 1986).

Research has shown that possible selves are important influences in academic attitudes and success (Leondari, Syngollitou, & Kiosseoglou, 1998; Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Oyserman, Bybee, & Terry, 2006). For instance, a person who holds high

expectations concerning his/her academic future is more likely to perform well academically and hold positive attitudes towards academia. In contrast, individuals who hold low academic aspirations are likely to perform poorly academically and are less likely to hold positive academic attitudes. Another construct that has been shown to be an important contributor to academic outcomes is identity exploration styles. Past studies have shown that identity styles, or processes individuals use to engage in identity exploration, are correlated with academic attitudes and performance (Berzonsky & Kuk, 2005; Boyd, Patricia, Kandell, & Lucas, 2003; Hejazi, Shahraray, Farsinejad, & Asgary, 2009; Lounsbury, Huffsteller, Leong, & Gibson, 2006). What is still unknown is how identity exploration styles are related to possible selves and how possible selves affect the relationship between identity exploration and academic outcomes. In other words, do possible selves, a conception that could be seen as an aspect of identity, influence the relationship between the exploration strategies or styles used by adolescents to develop their identity and the academic outcomes of academic attitudes and performance? This is the focus of the current investigation and the central expectation is that the link between identity exploration processes and academic outcomes and behaviors are affected by one's academic aspirations (i.e., possible selves).

This review of literature begins with possible selves theory (Markus & Nurius, 1986) and research addressing the linkages between possible selves and academic attitudes and performance (Leondari, Syngollitou, & Kiosseoglou, 1998; Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Oyserman, Bybee, & Terry, 2006). Then the review will proceed to identity theory and research including Erikson's theoretical perspectives (1959, 1968), Marcia's (1966, 1980, 1994) identity statuses and Berzonsky's (1989, 1990, 1992) identity styles. Finally, it will be proposed that the well documented connection between identity styles and academic attitudes

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and performance is mediated by possible selves. In other words, it is hypothesized that possible selves are the mechanism of the connection between identity exploration styles and academic outcomes. Because sex and ethnic differences can be expected in the outcomes, literature pertaining to their potential role in the relationship among these constructs will also be examined.

**Possible Selves**

As one gets older, he/she is often asked: "What do you want to be when you grow up"? Eventually such questions become persistent in one's mind. Thinking about the future involves future orientation, a process that is critical to development (Nurmi, 2005).

When engaging a future orientation, an individual is predicting his/her own development. More importantly, when aiming for a particular future, the person is directing his/her own development (Nurmi, 2005). Thinking about the future does not only involve thinking about what to become, but also what to avoid (Markus & Nurius, 1986; Nurmi, 2005; Oyserman & Fryberg, 2006). As a person thinks and plans about the specific outcomes to achieve or avoid, he/she is constructing possible selves.

Possible selves are best described as future-oriented selves. As Oyserman and Fryberg (2006) stated, "possible selves are the future-oriented component of a multifaceted self-concept" (p.3). Specifically, possible selves are mental representations of what one hopes to become, what one expects to become, and what one fears to become (Markus & Nurius, 1986; Oyserman & Fryberg, 2006). Studies have often described and examined possible selves based on one's expected self, hoped for self, and feared self (Carver, Reynolds, & Scheier, 1994; Unemori, Omoregie, & Markus, 2004).

Carver, Reynolds, and Scheier (1994) in their study gave concise descriptions of an expected possible self, a hoped for self, and a feared self. For instance, an expected possible self is the self one feels confident about becoming. One can feel confident about career plans or one's eventual marital or parental role identity (Kerpelman & Pittman, 2001). A hoped for self is the self one imagines or wishes to become but it may not necessarily be realistic. A five foot six inch tall man may wish to become a professional basketball player, but such a dream is unlikely to be realized. A feared possible self is the self one wants to avoid, or is afraid of becoming. Such selves can include being a criminal, a thief, or a failure in various life roles.

Oyserman and Fryberg (2006) argue that it is important for individuals to maintain a balance between feared selves and wished for or expected selves. Holding a balance can best be described as having not only an expected and/or a hoped for possible self but also a feared possible self as it's opposite. This balance takes into consideration the behaviors associated with both sides of the opposition. For adolescents, maintaining such a balance can facilitate attaining expected or hoped for possible selves and avoiding feared ones. Furthermore, having a balance between expected, hoped for, and feared possible selves can promote achievement of hoped for and expected possible selves without engaging in negative behaviors (Oyserman & Fryberg, 2006). For instance, hopes or expectations for popularity in school, if not also balanced with the opposite of popularity (i.e., rejection by peers) may lead to attention seeking behaviors undertaken with the goal of popularity but yielding undesired outcomes (e.g., writing graffiti on the school walls, being a class clown, getting into fights). The theory underlying the notion of balancing hoped for and expected possible selves with negative possible selves is that the feared self can help motivate the most likely behavior for attaining expected and/or hoped-for selves

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(Carver, Reynolds, & Scheier, 1994; Markus & Nurius, 1986). One who fears failure may take more action to become successful.

Markus and Nurius (1986) maintain that possible selves are constructed out of past and current representations of the self. For instance, people who consider themselves bad piano players are less likely to hold expected possible selves of becoming skilled piano players. However, Markus and Nurius argue that the same negative self-view among people with the hope of becoming skilled piano players can be used as motivation to practice. Past self-views and past experiences contribute to the construction and pursuit of possible selves. For example, someone who once received all A's on a report card could currently be working in the hopes of achieving that goal again. Thus, future oriented possible selves can help explain an individual's current behavior (Ruvolo & Markus, 1992). Someone who holds a possible self of earning an advanced degree is likely to study more and harder in the present than someone who does not. In addition to motivating behavior and explaining perseverance, possible selves are linked to interpretations of experience. For example, someone who fears being lonely and gets dumped by his girlfriend may interpret the loss more negatively than someone who does not hold this feared possible self.

Clearly, not all possible selves are positive (Markus & Nurius, 1986). People can hold negative or non-productive expectations regarding possible selves, even if the selves or circumstances to which they refer are not desired. For instance, one may not wish to remain poor, but may expect to remain in poverty in the future. Such negative future self-views are also constructed from past experiences and/or past and current self-representations (Markus & Nurius, 1986).

Serious consideration of possible selves begins in adolescence (Nurmi, 2005). During adolescence, the cognitive abilities necessary to think about long-term outcomes develop, parents offer more independence, youth assume more responsibilities, and social groups encourage exploration of future goals (Nurmi, 2005). Serious goals for education, occupation, and family begin forming in the adolescent period (Nurmi, 2005). Adolescents may also begin to worry about their future in terms of unemployment, and failure at school or in marriage.

Although possible selves are fundamentally self-focused views, they occur largely in social contexts and are social constructs (Oyserman & Fryberg, 2006; Unemori, Omoregie, & Markus, 2004) created and shared with significant others like parents, peers, dating partners and meaningful social groups (Kerpelman & Pittman, 2001). Therefore, possible selves may be held for being something that will make other important people happy, like being a good student could please parents or teachers. Moreover, possible selves are not likely to be held if they are viewed negatively in the social group. In fact, these negative perceived possible selves are more likely to be feared since attaining them may mean exclusion from the group (Oyserman & Fryberg, 2006). Possible selves can also be based on what seems attainable for a social or demographic group (Oyserman & Fryberg, 2006). In other words, if an aspiration is considered unattainable for the social or demographic group to which one belongs it is unlikely to become an expected or hoped for possible self.

Since its introduction from Markus and Nurius (1986), one of the most important areas of research on possible selves has been in relation to academic performance (Leondari, Syngollitou, Kiosseoglou, 1998; Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Oyserman, Bybee, & Terry, 2006). The following will be a review of studies linking possible selves with academic attitudes, and performance.

**Possible Selves, Academic Attitudes, and Performance**

Research has consistently shown a relationship between possible selves, and academic performance and attitudes. For instance, Kerpelman, Eryigit, and Stephens (2008) examined the relationship between being oriented toward future education and level of academic achievement among a sample of African-American students. Orientation to future education is similar to a possible self for being a successful student since it represents views of one's future in relation to academics. Participants were 374 African-American adolescents in 7th-12th grade at a rural county school and between the ages of 12-20 years old ($M$ = 15.3, $SD$ = 1.71). The sample was 59% female. Participants' grades were self-reported and orientation to future education was assessed from eight items derived from the *Future Orientation Questionnaire* (Nurmi, Seginer, & Poole, 1990) where participants reported how often they thought about and engaged in planning or behavior to promote their academic future. Results indicated that adolescents reporting higher grades also reported a higher level of future education orientation than adolescents with lower grades. Although this is a cross-sectional study and causality cannot be confidently attributed, these results suggest that thoughts, plans and activity directed toward one's educational future are factors in current academic performance.

Leondari, Syngollitou, and Kiosseoglou (1998) studied the relationship between possible selves and academic performance for 289 high school students between the ages of 14-15 years old. Possible selves were measured in terms of students' open-ended expectations for their future and what they wanted to avoid. Participants chose between two sets of scenarios: one consisted achieving versus failing to achieve their possible selves; the other consisted of attributing their outcome to luck or hard work. Academic performance was assessed through students' grade point average (GPA) collected from school records. Results of this cross-sectional study

indicated that, students who imagined themselves being successful due to hard work reported better grades. These results also support the notion of an association between possible selves and academic performance.

Oyserman (2008) stated that although academic performance and attitudes are positively related to academic possible selves, this association only prevails when strategies for attaining the possible selves also exist. In other words, having high goals about one's academic future is insufficient; it is important also to consider what procedures one will take to achieve the goal (e.g., completing assigned homework). She and her colleagues have shown that academic possible selves need to be linked to academic strategies to lead to improvements in academic performance (Oyserman, Bybee, Terry, & Hart-Johnson, 2004; Oyserman, Bybee, & Terry, 2006).

Oyserman, Bybee, Terry, and Hart-Johnson (2004) investigated whether academic possible selves that are linked to strategies lead to improvement in academic performance. Participants were 160 eighth-graders from three inner-city middle schools and from low-income families (51% boys). This was a longitudinal study where participants completed a questionnaire at the beginning and at the end of the school year. School grades were collected during the fall and spring for each student and referral to summer school was collected for each student at the end of the school year. Both were used to assess academic performance. Academic possible selves and strategies used to attain such selves were measured through an open-ended questionnaire where participants wrote-down their academic aspirations and the strategies they planned on using to achieve their goals. Information regarding each student's participation in class was collected through teacher reports. Results showed that students with positive academic possible selves combined with academic strategies (e.g., taking one's studies seriously, listening

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in class, completing the work assigned) were more likely to have good grades at the end of the school year. Such students were also more engaged in classroom activities, more likely to complete their homework and less likely to have to repeat classes in summer school. Although causation cannot be implied, results of the Oyserman et al., (2004) study support the notion that strategies are influential in one's academic possible selves.

Oyserman, Bybee, and Terry (2006) implemented an intervention called School-to-Jobs (STJ) on 264 eighth-grade low-income students with the goal of directly influencing their academic possible selves, associated strategies, and academic outcomes. Another goal of the study was to examine a path of causal influence from intervention to possible selves and then to engagement in strategies, and ultimately to a higher level of academic performance. Participants were randomly assigned into an intervention group (141 participants) and a control group (123 participants). The intervention group partook in 13 sessions consisting of activities focused on making academic possible selves salient to participants, making participants aware of their significance (i.e., why they are important) and making participants realize the strategies they must associate with their academic possible selves in order to achieve them. Academic performance was assessed through students' test scores and grade point average (GPA) obtained from school records. Strategies linked to academic possible selves were obtain from teacher reports (e.g. "How often does this student do more than the work assigned") and students' self-reports (e.g., "How many hours a week do you usually spend doing homework; How often are you absent from school or do you miss class during the day"). Results indicated that the intervention group reported better grades and better standardized test scores relative to the control group after the intervention. The intervention group was also more likely to engage in strategies such as attending class, completing their homework, taking initiative, and being more

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attentive in class. Moreover, the strategies used by students were found to be a mediator of the effect of possible selves on academic performance.

The above studies support the notion that possible selves are influential in the academic performance and attitudes of high school aged students. Furthermore, the effect of possible selves is maximized through strategies or behaviors implemented. Based on this previous work, the present study proposes that a positive relationship will be found between academic possible selves and academic attitudes and performance. Also in support of previous work, the present study will examine if strategies associated with academic possible selves mediate the relationship between academic possible selves and academic outcomes. The type of strategy that will be assessed in the present study is time spent in homework. In general, studies have shown that homework completion and time spent in homework are positively associated with academic performance (Cooper, 1989; Cooper, Robinson, & Patall, 2006; Keith, 1982; Keith, Diamond-Hallam, & Fine, 2004; Tymms & Fitz-Gibbon, 1992). This research will now be reviewed.

**Importance of Homework on Academic Outcomes**

Homework can best be described as any task that is assigned by schoolteachers that is to be completed by students during nonschool hours (Cooper, Robinson, & Patall, 2006; Epstein & Van Voorhis, 2001). A positive relationship between homework completion and academic achievement is well documented in the literature (Cooper, 1989; Cooper et al., 2006; Keith et al., 2004; Tymms & Gibson, 1992).

Bang, Suang-Orozco, Pakes, and O'Connor (2009) were interested in the effects of homework completion on grades. Their sample consisted of 309 immigrant students who recently arrived to the United States from countries such as Central America, China, the Dominican Republic, Haiti, and Mexico. Participants were between the ages of 9-14 years old.

Data were collected from students as part of the five-year Longitudinal Immigrant Student Adaptation (LISA) study (only data from the fifth year of the LISA study was used). Students' report cards were collected from participants to assess academic performance. Homework completion was reported by teachers who were to answer for each student how often he/she turned in homework assignments. Responses were rated on a five-point scale ranging from "never" to "always". Results showed that homework completion was a significant predictor to grades, even when controlling for demographic variables (e.g., gender, maternal education, parental employment, and family composition). Although the present study is not examining immigrant populations, Bang et al's., (2009) study nevertheless indicates the importance of homework to academic achievement.

Research on the effects of homework on grades has also shown that it is not only completing homework that is influential to grades, but also how much time one spends studying and/or completing their homework assignments. Students who put in more time in their homework perform better academically than those who put in less time (Cooper, 1989; Cooper et al., 2006; Keith, 1982). Furthermore, some studies have shown the relationship between homework and academic outcomes to be curvilinear. As more time is spent in homework more positive academic outcomes are seen until such a large amount of time is spent that it becomes detrimental to academic performance (Cooper et al., 2006).

Keith (1982) examined the effects of time spent on homework on grades on a sample of 20,364 high school seniors. Data were collected from these students in the first wave of the National Center for Education Statistics' High School and Beyond Longitudinal study (HSB). Time spent on homework was assessed through the following question: "Approximately what is the average amount of time you spend on homework a week?" Students answered this question

on a six-point scale ranging from 0 (*I have homework but I don't do it/no homework is ever assigned*) to 5 (*more than 10 hours a week*). Grades were self-reported in eight categories where higher scores indicated higher grades. Results indicated that the more time students spent on homework, the higher their grades.

Chen and Lu (2009) investigated the effects of homework time on educational achievement in a sample of Taiwanese students. Participants completed the *Taiwanese Educational Panel Survey* (TEPS). The sample consisted of 10,347 11th graders and was 49% male. Educational achievement was assessed by four curriculum-free ability subtests (analytical, mathematical, language, and science ability subtests). Each score for each subtest was combined into one composite score, with higher scores indicating higher educational achievement. Time spent in homework was self-reported by students reporting as the number of hours spent in homework every day. Homework time was collected during the 11th grade year, whereas educational achievement was collected at the beginning of the 12th grade. Results indicated that 11th grade homework time predicted subsequent educational achievement.

Bowen and Bowen (1998) examined the influence of time spent on homework on academic performance among 538 middle and high school students from eight communities in North Carolina and Florida (51% female and 60% minority). Homework time was rated on one five-point scale item ranging from "none" to "more than two hours" per night. Academic performance was self-reported in terms of: a) the grades most received in their most current report cards, b) how many D's and F's were received in their most current report cards, and c) their perception of their own level of academic performance compared to other students. Scores were summed and higher scores indicated higher academic performance. Results showed that time spent on homework positively predicted students' level of academic performance.

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Based on the literature, it can be concluded that time spent on homework is an important contributor to academic outcomes. Therefore, if time spent on homework is influential to academic performance, it may be an important strategy that students use to attain their academic goals. With this in mind, the present study will assess time spent on homework as a strategy used to realize academic possible selves. It is hypothesized that adolescents who hold positive academic possible self views will spend more time in homework, which will in turn lead to positive academic outcomes. Thus, homework time is expected to mediate the relationship between academic possible selves and academic outcomes.

Thus far, the literature on possible selves, the relationship between possible selves and academic outcomes, and the role of time spent on homework in this relation has been examined. However, adolescence is not only a period of thinking about future selves, but also a period of identity exploration (Erikson, 1959, 1968; Berzonsky, 1989, 1990; Marcia, 1966, 1980, 1994). Here we will proceed with a review of identity theory and research.

**Identity**

In the movie *The Nanny Diaries* (2007), Annie Braddock (played by Scarlett Johansson) was a 21-year-old college graduate. She had just earned her college degree in anthropology and was headed to an interview for an internship at a big corporation. During this interview, the employer asked Annie one simple question: "Who is Annie Braddock?" The interviewer wanted Annie to describe herself in a few sentences, but Annie went blank. She was unable to describe herself, even in a few simple words.

During adolescence and the transition to adulthood, one begins to ask oneself questions similar to the one Annie Braddock was asked in her internship interview: Who am I? Where am I going? What is my purpose in life? What are my goals? What are my values and beliefs? What

makes me different from other people? Trying to answer such questions is part of the identity

formation process. According to Erikson (1959, 1968), although identity formation is the lifelong

process of developing and revising one's goals and values, it is one of the principal tasks of

adolescence.

The answer to the question "Who am I" is one's identity or self-definition. Erikson (1959,

1968) stated that human beings strive to understand and accept themselves and their fit with

society. Developing an identity is the "psychosocial aspect of adolescing" (Erikson, 1968, p. 91).

Although the identity formation process is not limited to the period of adolescence, it is during

adolescence that one begins to develop the physical maturity, cognitive processes, physiological

growth, and social responsibility that are necessary to actively engage in the process of identity

formation (Erikson, 1968; Marcia, 1980).

Through the identity process, an individual creates a set of personal and defining values,

goals, and beliefs. If an individual fails to create a self-definition, this individual is said to

experience identity confusion (Erikson, 1968; Schwartz, 2001), which is experienced as a lack of

purpose in life or an inability to fit into society. Referring back to Annie Braddock, her inability

to answer when asked "Who is Annie Braddock" could be an example of identity confusion.

Identity confusion can also be shown in less extreme situations such as not being able to decide

where to go for college, or not being able to decide on a major once in college (Schwartz, 2001).

Although Erikson's concept was an interesting and groundbreaking theoretical perspective, he

failed to provide a way to measure identity. Eventually researchers came to fill that void, with

the first being Marcia (1966, 1980, 1994).

According to Marcia (1966, 1980, 1994), throughout adolescence one examines different

alternatives and learns about different directions, beliefs, and values. Based on these different

alternatives, one begins to make choices and/or personal investments in the best suited ones (Marcia, 1966, 1980, 1994). The process of experiencing and engaging in different alternatives is referred to as identity exploration. The process of making decisions or investments is known as commitment (Marcia, 1966, 1980, 1994; Schwartz, 2001). According to Marcia (1980), identity is based on commitments. For instance, one must commit to a "sexual orientation, an ideological stance, and a vocational direction" (Marcia, 1980, p. 160). Such personal investments to different choices can also be seen when one makes decisions on whom to date, where to go to college, what to major in, or where to move. Such decisions according to Marcia are part of the identity-formation process (Marcia, 1980).

Although identity is expressed in commitments, Marcia realized that the exploration process that preceded these decisions was also critical to identity formation (Schwartz, 2001). He identified four identity outcomes based on combinations of exploration (or not) and commitment (or not) which he called identity statuses: (a) Achievement, (b) Moratorium, (c) Foreclosure, and (d) Diffusion. Achievement refers to making commitments after having actively explored different alternatives. Moratorium involves exploring different alternatives, having not yet made a commitment. Foreclosure consists of making commitments without having gone through a period of exploration. Such individuals mostly adopt views and beliefs from significant others (e.g., parents, peers, others) rather than develop their own. Diffusion is most simply defined as a lack of exploration and a lack of commitment (Marcia, 1966, 1980, 1994).

Marcia first assessed identity statuses in his study of 86 college male students. Identity statuses were assessed through a 15-30 minute semi-structured interview concerning the degree of commitment and exploration in areas of religion, occupation, and politics (Marcia, 1964). An example question in the occupational area would be: "How willing do you think you'd be to give

up going into… if something better came along"? (Marcia, 1966, p. 553). A typical answer for someone in the identity achieved status would be: "Well, I might, but I doubt it. I can't see what something better would be for me" (Marcia, 1966, p. 553). Answers were scored based on the presence of exploration and commitment.

Identity statuses have been linked to different personality traits (Marcia, 1980, 1994; Schwartz, 2001). For instance, in his literature reviews, Marcia (1980, 1994) found that individuals in the foreclosure status were more authoritarian and more inclined to submit to authoritarianism than individuals in other statuses (i.e., they held rigid beliefs, set high goals for themselves, and their decisions were largely influenced by others). Foreclosed individuals also had high levels of stress relative to individuals in other statuses (Marcia, 1966). Individuals in the moratorium status were the least authoritarian (Marcia, 1994) but the most anxious (Marcia, 1980, 1994) compared to individuals in the remaining identity statuses. Individuals in the achieved status set higher goals for themselves and had the greatest persistence relative to individuals in the other identity statuses (Marcia, 1966). They also performed better under stress and had more stable self-esteem relative to individuals in the other three identity statuses (Marcia, 1994). Identity diffusion was linked with greater difficulty performing under stress, more conformity with the external expectations, less stabilized self-esteem, and less development of moral thought compared to other identity statuses (Marcia, 1994).

Marcia expected identity statuses to change in patterned ways. For example, individuals in the identity foreclosure status, who were committed to an identity decision that they did not explore directly, were expected to shift into moratorium, where their commitment would be questioned and alternatives considered, leading to identity achievement, where direct exploration would facilitate a personal identity commitment (Marcia, 1994). Many researchers have used

Marcia's identity status theory in their studies of identity processes. A weakness of identity status theory, however, is its measurement emphasis on outcomes rather than processes. Berzonsky (1989, 1990, 1992) conceptualized identity development as a process rather than an outcome and developed a self-report scale to measure it. This strategy has been used to measure identity processes in the present study.

Berzonsky (1990) stated that individuals engage in certain social-cognitive strategies in order to make identity related decisions. He identified three such strategies, or styles, individuals use to engage in the identity-exploration process. Where identity statuses are conceptualized in terms of past exploration and current commitments, identity styles are conceptualized as the ways in which individuals are currently engaging in identity exploration independent of corresponding commitments. According to Berzonsky, individuals can either use: (a) an informational identity style, (b) a normative identity style, or (c) a diffuse-avoidant identity style.

Individuals with an informational identity style are actively engaged in the identity exploration process (Berzonsky, 1990; Pittman, Kerpelman, Lamke, & Sollie, 2009). Such individuals seek out information and evaluate the benefits and consequences of each alternative and use more effective problem-solving strategies to solve identity related problems (Berzonsky, 1990; Pittman, et al., 2009; Schwartz, 2001). An informational identity style is positively correlated with the identity achievement and moratorium statuses (the latter only when the effects of commitment were controlled; Berzonsky, 1989) because both of these statuses involve active identity exploration. An example of an informational identity style can be seen in an undergraduate student exploring his occupational identity by carefully examining different graduate school programs before applying for admissions, or as someone exploring his political identity by learning about different political parties.

Individuals using a normative identity style are not as active in the identity exploration process. They tend to make decisions based on others' expectations (Berzonsky, 1990; Pittman, et al, 2009; Schwartz, 2001) and can be relatively close-minded, dogmatic, rigid, and inflexible about their beliefs. The normative identity style is positively related to the foreclosure identity status (Berzonsky, 1989) because identity alternatives are adopted from the expectations of others rather than directly explored. A normative identity style can be seen in an individual exploring his occupational identity by deciding to become a dentist because his mother wanted him to become a dentist, or from someone exploring his religious identity by becoming a Christian because his friends are Christians.

The diffuse-avoidant identity style is defined in terms of a lack of (effective) exploration. This identity style has been linked with procrastination or waiting until the last minute when making identity related decisions (Berzonsky, 1990, 1992; Berzonsky & Ferrari, 1996, 2009; Schwartz, 2001) or with an unfocused, disorganized exploration strategy (Schwartz, 2001). It has been associated with evasiveness or reactivity, rather than planning ahead (Berzonsky, 1990; Pittman, et al, 2009; Schwartz, 2001). The diffuse-avoidant identity style is positively correlated with the diffuse identity status (Berzonsky, 1989) and is illustrated by someone whom, rather than exploring his educational identity by getting information from different colleges, applies to one college right before the deadline.

Berzonsky (1992) observed how students with different identity styles cope with everyday stressors. Identity styles were assessed through a self-report questionnaire (*Identity Style Inventory*; ISI) where participants rated on 5-point scale identity-related statements (e.g., "When I have to make a decision, I like to spend a lot of time thinking about my options"; Berzonsky, 1992, p. 776). A similar method was used to assess how participants coped with

everyday stressors. Participants were 171 college undergraduates (60% females; $M = 19.7$ years old). Results of this cross-sectional, self-report study indicated that students with an informational identity style were more likely to engage in problem-focused strategies to deal with stressors. Students with a diffuse-avoidant identity style were more likely to use emotion-focused coping tactics such as distancing (e.g., "try to forget the whole thing"), wishful thinking (e.g., "wish that the situation would go away or somehow be over with") and tension reduction (e.g., "I jog or do something to forget about the problem"). Students with a normative identity style also tended to rely on emotion-focused coping tactics to deal with stressors.

Berzonsky and Ferrari (1996) examined the relationship between identity styles and strategies used to make decisions. Participants were 338 undergraduate psychology students between the ages of 18 to 21 years old of whom 75% were females. The ISI was again used to assess identity styles. Strategies used to make decisions were assessed through a series of self-reported questionnaires. Results showed that diffuse-avoidant participants reported panic, tended to procrastinate and relied on maladaptive practices such as avoidance and excuse making when the time came to make decisions. Participants with an informational identity style were more vigilant when it was time to make a decision, and they evaluated the pros and cons of their situation. Participants with a normative identity style were more vigilant than participants with a diffuse-avoidant identity style, but more maladaptive than informational participants.

Berzonsky and Ferrari (2009) conducted three cross-sectional studies examining strategies individuals with a diffuse-avoidant identity style use to deal with everyday situations. One of these studies (Study 3) examined whether diffuse-avoidant participants were more likely to look to or compare themselves to others when the time came to engage in situationally-appropriate decisions. Participants were 173 undergraduate psychology students (63% female)

between the ages of 18-22 years old (*M* =20.5). The ISI was also used here to assess identity styles. How participants engage in social situations was assessed through a series of self-monitoring measures (e.g., "When I am uncertain how to act in a social situation, I look to the behavior of others for cues"). Results indicated that diffuse-avoiders were more likely to look to others or compare themselves to others when it was time to make decisions or to engage in situationally appropriate behaviors.

From the foregoing conceptual definitions of the three identity styles and the above studies, it can be concluded that individuals who tend to use an informational identity style are more active in the identity formation process relative to individuals who tend to use a normative or diffuse-avoidant identity style and tend to experience more positive individual and identity outcomes than those with a diffuse-avoidant identity style. The literature is more mixed on whether the normative identity style yields poorer outcomes. For the normative style, outcomes may depend more on significant others' expectations (Pittman, et al, 2009). However, because all of the research reviewed is cross-sectional and non-experimental, causation cannot be implied. It can only be concluded that certain identity styles are related to specific outcomes, not that identity styles lead to such outcomes. This literature review will now proceed with a review of studies linking identity with academic attitudes and performance.

**Identity, Academic Attitudes and Performance**

Many researchers have been interested in examining the relationship between identity and academic performance and attitudes. An example is the cross-sectional study conducted by Lounsbury, Huffsteller, Leong, and Gibson (2006). They asked whether a relationship prevails between a sense of identity and academic performance, even after controlling for the Big Five personality traits (extraversion, openness, conscientiousness, agreeableness, and emotional

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stability). Having "a sense of identity" was conceptualized as having a firm sense of oneself, a purpose in life, a clear set of personal values, and personal goals. Academic performance was measured based on participants' self-reported grade point average (GPA). Participants were 434 second semester college freshman. A total of 58% of the participants were females. Furthermore, 88% of the participants were between the ages of 18-19 years old. Results indicated that a sense of identity positively correlated with academic performance, even after controlling for the Big Five personality traits. In other words, having a firm self-perception, having a purpose in life, a clear set of personal values, and personal goals was associated with a higher GPA. Results also showed that although all Big Five personality traits were positively correlated with GPA, having a sense of identity revealed the highest correlation ($r = .31$).

The present study focuses not on a sense of identity, but rather on the styles used by individuals to form that sense of identity, specifically, Berzonsky's identity styles. Past studies have found identity styles to be a factor in academic attitudes and performance. For instance, Boyd, Patricia, Kandell, and Lucas (2003) asked: What type of identity styles do first-year undergraduate students use and how does that style affect their academic self-efficacy, performance, and retention? Self-report data were collected from participants during a new student orientation and participants' academic performance and registration status was followed for four years and collected from school records. Participants were 2,818 full-time first-year undergraduate students made up of 51% males. Academic attitudes included academic self-efficacy, certainty about choice of major, and feeling prepared for college. Findings revealed that students with an informational identity style reported feeling more prepared for college, and more certain about their major (although they were open-minded about other alternatives). They performed well academically and were well-adjusted to college. Students with a normative

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identity style stated they felt supported by their family in their decision to go to college, they felt prepared for college and confident about their major. Unexpectedly, they also expressed open-mindedness about other alternative majors. Finally, students with a diffuse-avoidant identity style said they were having more difficulty adjusting to college; they performed more poorly academically, were indecisive on a major, and did not feel supported by their friends and family about their decision to go to college. Although these results do not imply causation, they suggest that identity styles are related to academic attitudes and performance.

Berzonsky and Kuk (2005) also examined the relationship between identity styles and academic performance and adaptation to college in a longitudinal study of freshmen students' first year in college. Academic performance was measured in terms of Scholastic Aptitude Test (SAT) scores and students' first-two term grade point average (GPA) collected from school records. Adaptation to college was assessed through several measures of psychosocial development (academic autonomy, educational involvement, career plan, lifestyle planning, life management, cultural participation, emotional autonomy, tolerance, peer relationships, intimacy, and salubrious lifestyle). Identity styles were assessed with the ISI. Participants were 460 first-term freshmen ($M = 18.3$ years old). Sixty percent of the sample was female. Results indicated that GPA was positively related to the informational identity style and negatively related to the diffuse-avoidant identity style. No relationship was found between identity styles and SAT scores, which suggest that style is not related to aptitude but rather to performance factors. Beyond grades, the informational identity style was related to better scores on emotional autonomy, time-management, tolerance, openness and life-management skills. The diffuse-avoidant identity style was associated with poorer scores on college adaptation overall, personal and academic purpose, identity commitment, life planning, career planning, and educational

involvement. Finally, the normative identity style was linked to high scores on identity commitment, clarity of purpose and direction. From these results, it can also be concluded that identity styles are factors in one's academic attitudes and performance.

Hejazi, Shahraray, Farsinejad, and Asgary (2009) examined the relationship between identity styles and academic achievement mediated by academic self-efficacy. Participants were 400 Iranian high school students ($M = 15.5$ years old), 50% females, who had chosen a major field of study. Identity styles and self-efficacy were both assessed through self-reported measures. Academic achievement was assessed through participants' grade point average from the previous semester and the past academic year of this study. Results indicated that without controlling for academic self-efficacy, informational identity style was positively correlated with academic achievement, diffuse-avoidant identity style had a negative relationship with academic achievement, and normative identity style had no direct association with academic achievement. When academic self-efficacy was included as a mediator, the significant effect for informational identity style on academic achievement was fully mediated, but the significant negative effect of diffuse-avoidant identity style was not mediated. Although full mediation was not supported for the normative identity style, this style was positively correlated with academic self-efficacy which in turn was positively correlated with academic achievement. This cross-sectional study also supports the notion that a relationship exists between identity styles and academic performance.

In summary, these studies have shown that identity processing style is a factor in academic performance and attitudes towards academics. Specifically, having an informational or normative identity style appears to promote students' academic performance, adaptation to their academic environment, and attitudes towards school. The present study proposed to replicate

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findings of past studies by testing the hypotheses that the informational and normative identity styles will be positively associated with better academic performance and more positive attitudes toward academics while negative associations will be shown for the diffuse-avoidant identity style. A contribution this study will add to the literature is that it examines these relationships among high school students. The majority of the research has examined the relationship between identity styles and academic outcomes among undergraduate college students (with the exception of the Iranian high school sample studied by Hejazi, et al., 2009). The following is a review of the few studies that have examined the relationship between identity and possible selves.

**Identity and Possible Selves**

Few studies have examined how identity constructs matter to an individual's future-oriented selves. One was conducted by Pulkinnen and Rönkä (1994). These researchers examined whether a relationship exists between identity statuses and future orientation. Data were collected from 287 participants who were part of a longitudinal study on social development in Jyväskylä, Finland (51% females, $M = 26$ years old). Identity statuses were assessed through Grotevant and Adams' (1984) questionnaire. Participants were asked questions regarding their degree of exploration and commitment in eight identity domains. Future orientation was measured through a brief questionnaire and a semi-structured interview regarding their future-oriented expectations. Interviews were coded for clear expectations, clear and realistic plans, optimism about the future (i.e., evaluation of the future) and motivation to face the future. Results indicated that identity achievement positively correlated with a motivation to face the future, whereas identity diffusion was negatively related with a motivation to face the future. No relationship was shown between identity statuses and evaluation of the

future. Nevertheless (although causation cannot be implied) these results suggest that the identity statuses may be a factor in an individual's future orientation.

Kerpelman and Mosher (2004) were interested in how orientations toward future education and future career among African-American youths were related to self-efficacy, control and responsibility of personal (i.e., choosing a college or career), and interpersonal (i.e., problems with parents, siblings) life challenges, and identity exploration and commitment. Participants were 267 African-American adolescents between the 7th through 12th grades. The sample was 63% female. The noted above constructs were assessed through self-reported questionnaires. Results showed that orientations to both future education and future career were positively correlated with identity exploration and commitment, control and responsibility, and self-efficacy. Furthermore, multiple regression analyses revealed that both identity exploration and identity commitment were significant predictors of future orientation. Interestingly, identity exploration was a predictor of participants' orientations to their future career, whereas identity commitment was shown as a predictor of future education orientation. From these results, it can be concluded that identity is influential to one's future orientation.

The above studies support links between future orientation and identity, but do not speak directly to a relationship between identity and possible selves. Dunkel (2000) examined this relationship under the hypothesis that possible selves drive the identity exploration process. Since the moratorium status describes individuals engaged in identity exploration but as yet uncommitted, Dunkel also hypothesized that the moratorium status would be related to more possible selves. Participants were 277 undergraduate psychology students (54% females) between the ages of 17 to 25 years old ($M = 20.9$ years old). Identity was measured through the *EOM-EIS-2* (Adams et al., 1989), a self-reported measure that assesses Marcia's identity statuses

where participants rated self-descriptive statements on a 6-point Likert-type scale. Possible

selves were assessed as participants answered yes or no to whether a list of possible selves

applied to them (e.g., taxi driver, sexy). Participants then rated on a 5-point scale how often they

thought of possible selves and how likely it was that they would attain those they thought applied

to them. Results indicated that individuals whose identity status was classified as "moratorium"

reported more possible selves than other participants. Other results indicated that the diffusion

status was related to the least possible selves. Also the foreclosed status was related to a stronger

likelihood of feeling that possible selves would be attained. Therefore, from these results, Dunkel

concluded that possible selves are a mechanism for the identity exploration process.

Dunkel and Anthis (2001) attempted to replicate Dunkel's findings and examined if

individuals with high levels of identity commitment would report the same hoped for and feared

possible selves across time. Participants were 116 undergraduate psychology students (61%

females) ranging from 18-25 years old ($M = 20.49$, $SD = 1.89$). Dunkel and Anthis assessed

identity statuses through the *Ego Identity Process Questionnaire* (EIPQ; Balistreri et al., 1995).

This measure originally measures identity exploration and identity commitment through self-

report format. The authors labeled each participant under of the four identity statuses

(achievement, moratorium, foreclosure, and diffusion) based on their level of exploration and

commitment indicated in the EIPQ. Possible selves were measured through an open-ended

format where participants listed their hoped for and feared possible selves. Participants

completed these measures once and again four months later. Counter to the expectation that the

moratorium status would show the largest number of possible selves, results indicated that

distinction went to the achieved status. Identity achieved participants reported more hoped for

and more feared possible selves than participants under the diffusion and foreclosed statuses.

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Identity exploration was positively correlated with the number of hoped for and feared possible selves. Results also showed that participants who scored high on identity exploration at Time 1 were more likely to generate more hoped for and feared possible selves at Time 2. Participants who scored low on identity exploration at Time 1 decreased in their number of hoped for and feared possible selves at Time 2. Furthermore, participants with high levels of identity commitment at Time 1 tended to report the same hoped for selves at Time 2. No significant differences were found for feared possible selves and high and low levels of identity commitment. Although the findings were not fully as expected, Dunkel and Anthis concluded that, since it takes some form of identity exploration to be under the identity achievement status and since identity exploration was shown to be correlated with the identification of possible selves, possible selves seem to be drivers of the identity exploration process.

It is a possibility that Dunkel and Anthis (2001) did not replicate Dunkel's (2000) findings because the two studies used different measures to assess their variables of interest. Furthermore, although both studies showed that some form of identity exploration (identity achievement and moratorium) was related to the number of possible selves generated, more is needed to conclude that possible selves are drivers of identity exploration. The present study will expand on this theory by examining the relationship between identity styles and academic possible selves. In extension of Dunkel's theory that possible selves drive identity exploration, it is hypothesized that forming possible selves is an expression of identity exploration and the style or approach to identity exploration used by individuals precede the formation of possible selves. Since Dunkel's study used Marcia's identity statuses, it is easy to see why the identity variable would be considered the outcome. For the present study, use of Berzonsky's identity styles will permit a more process oriented conceptualization of identity exploration.

The present study hypothesized that informational identity style will be related to positive academic possible selves and diffuse-avoidant identity style will be related to negative academic possible selves. Positive academic possible selves are defined in the present study as having more positive expectations, higher hopes and fewer fears about one's academic future, whereas holding negative academic possible selves means having more negative expectations, less hopes and greater fears about one's academic future. These hypotheses are supported by the mapping of identity styles to identity statuses (informational – achievement; normative – foreclosure; diffuse-avoidant – diffused; Berzonsky, 1989) and the previous findings indicating that informational identity style is linked with positive academic outcomes whereas the opposite has been shown for diffuse-avoidant identity style. Clearly, an active exploration style is important to academic attitudes and performance. The normative identity style is expected to be related to positive academic possible selves as well because this style has been shown to be positively correlated with academic outcomes (Berzonsky & Kuk, 2005; Boyd et al., 2003; Hejazi et al., 2009). Those who adopt a normative identity style may perform well academically to meet others' expectations, but they may also hold positive academic self-views for these same reasons. Next we will proceed to our explanation of academic possible selves as mediators to the relationship of identity styles and academic outcomes.

**Identity, Possible Selves, and Academic Outcomes**

Thus far, we have reviewed the linkage between academic possible selves and academic outcomes (Leondari, et al., 1998; Oyserman, 2008; Oyserman, et al., 2004, 2006) and the relationship between identity styles and academic outcomes (Berzonsky & Kuk, 2005; Boyd et al., 2003; Hejazi et al., 2009). We have also proposed a relationship between identity processing styles and academic possible selves. If identity styles and possible selves are related to each other

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and to academic outcomes, and if identity styles can be considered conceptually prior to the formation of possible selves, it may be that academic possible selves mediate the relationship between identity styles and academic outcomes. However, should the mediation hypothesis extend to all three identity styles?

It was earlier hypothesized that being active in identity exploration (i.e., informational identity style) will be positively associated to academic aspirations (i.e., academic possible selves) and academic outcomes. Therefore, the mediation hypothesis is expected for the informational identity style. Similarly, it is expected for the diffuse-avoidant style because this style is characterized by low exploration, high procrastination, and high avoidance, factors that contribute to poor academic outcomes. Regarding normative identity style, it is expected that individuals using such a style tend to have positive academic self-views, perform well academically, and hold positive academic attitudes in order to meet the expectations of significant others. Therefore, the mediation hypothesis is expected to hold for all three styles, including the normative style. Gender and ethnic differences are also expected. The following reviews the relevant research.

**Gender Differences**

Studies have shown gender differences in how adolescents and young adults regard their future. Knox, Funk, Elliot, & Bush (2000) examined 212 high school students (60% females) between the ages of 14-19 years old ($M = 16.4$). Adolescents' grade level ranged from ninth through 12th grade. Possible selves were measured through an open-ended format in which participants listed all the possible selves they could think of for themselves. Participants also rated on a 7-point Likert scale how likely/capable they were to attain each listed possible self. Also, participants rated on a 4-point Likert scale how much they hoped for and feared each self.

Results indicated that boys reported more hoped for possible selves in relation to occupation, whereas girls reported more hoped for possible selves related to romantic and/or interpersonal relationships. Results also showed that boys listed more feared possible selves in relation to physical illness, death, and general failure, and girls reported more feared possible selves in the categories of romantic and/or interpersonal relationships. Girls also felt their feared possible selves were more likely to occur than boys.

Gender also matters for the linkage of future orientation to academic attitudes and performance. Kerpelman et al., (2008) in their study of 374 African-American high school students in rural Alabama found that females reported higher academic aspirations than males. Also females in good academic standing were more likely to report higher levels of academic related ambitions. Males in good academic standing had no more ambitious academic goals than those in poor academic standing. Kerpelman and Mosher (2004) also found in their study of 267 African-American adolescents that girls reported a higher level of future education orientation than boys, perhaps because girls generally outperform boys academically (Leondari et al., 1998; Oyserman et al., 2004).

Not many studies have examined whether gender differences exist in identity formation. Berzonsky (1992) found that females are more likely to engage in an informational identity style whereas boys are more likely to use a diffuse-avoidant identity style. Lannegrand-Willems and Bosma (2006) also found that girls are more likely to engage in identity exploration than boys.

Gender differences have also been shown when linking identity with academic attitudes and performance. For instance, Boyd et al., (2003) in their study of 2,818 undergraduate students found that women on average reported a higher level of informational identity style whereas men reported a higher level of diffuse-avoidant identity style. No gender differences

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have been found in relation to normative identity style. From these results, it can be concluded that girls on average engage in more effective identity exploration strategies than boys.

The present study examines gender differences among all measured constructs and their inter-relations. Consistent with past research, it is expected that females will outperform males academically, hold more positive academic possible selves, report a stronger informational identity style and have a weaker diffuse-avoidant style than males. No specific gender differences are expected for the normative identity style.

It was earlier hypothesized that an informational identity style would be related to positive academic possible selves and a diffuse-avoidant identity style would be related to negative academic possible selves. The present study proposes that the former relation will be stronger for women and the latter will be stronger for men. Ethnic differences among these construct will also be examined and are reviewed in the following section.

**Ethnic Differences**

Oyserman et al., (2004) reported that African-American students were just as likely as students from other ethnic groups to attain their academic possible selves when such selves were linked to strategies (e.g., spending time doing homework). This is one of the few studies that have examined ethnic differences in academic possible selves.

Another example is an experimental study conducted by Oyserman, Ager, and Gant (1995). An aspect of this study examined the nature of the social context perceived by adolescents and its relevance to possible selves and the strategies adopted. Participants were 105 undergraduate psychology students, 60% identified as White and 40% identified as Black. Possible selves and the strategies participants used to attain their possible selves were both assessed through open-ended format. Possible selves mentioned by participants were coded into

one of the five following categories: achievement related (school or job), interpersonal relationships, intrapsychic traits/personality characteristics, attainment of personal goals, and negative or non-normative self-descriptors. The social context was assessed through a closed-ended Likert scales measuring the following constructs: individualism (e.g., "I am a unique person, different from anyone else"), collectivism (e.g., "A mature person helps his/her group before all else"), Protestant work ethic (e.g., "A distaste for hard work shows weakness in character"), and ethnic identity (e.g., "Only members of my own group can really understand me"). Results indicated that for White students, high levels of individualism and a Protestant work ethic were related to the number of strategies used to attain their possible selves, whereas for Black students, high levels of collectivism and ethnic identity were positively correlated to the number of strategies used to attain their possible selves. From these findings it can be concluded that Whites and Blacks perceive a different social contexts and that these differences promote the process of possible self and strategy development differently for the two ethnicities. For Whites, individualism is prominent while for Blacks possible selves may link to hopes of being accepted by their social group. By extension, these findings suggest that African-Americans may be more likely to use a normative identity style whereas European-Americans may be more likely to use an informational identity style.

The few studies that have examined ethnic differences in identity styles have found that African-Americans are more likely to use a normative identity style (Boyd et al., 2003). Since, a normative identity style has been linked to positive academic attitudes and performance at the same level as the informational identity style (Berzonsky & Kuk, 2005; Boyd et al. 2003; Hejazi et al., 2009), these results also support the notion that African-Americans may be able to convert a normative identity style into positive attitudes towards academics and positive performance

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academically. However, for African-Americans, attitudes and/or level of school performance may be motivated at least in part by meeting others' expectations.

The present study examines ethnic differences among all measured constructs and their interrelations. Since the majority of the research on identity has focused on European-American college students, an important contribution of this study is its inclusion of African-Americans and its focus on a high-school aged sample.

**The Present Study**

From the previously reviewed studies, it has been argued that adolescence is a critical period for planning future outcomes and for identity exploration. Understanding these constructs on high-school aged adolescents is important because adolescents' high-school experience may provide them opportunities to begin thinking about their possible selves and to explore their identity. Also, adolescents' academic outcomes in high-school are important for their future as successful adults. It has also been argued above that academic possible selves may mediate the relationship between identity styles and academic attitudes and performance. These arguments provide the basis of the following research questions/hypotheses that will be addressed in the present study:

**Research Hypothesis 1: Academic possible selves are related to academic outcomes.**

Past studies have shown that academic possible selves are positively correlated with academic attitudes and performance (Leondari et al., 1998; Oyserman, 2008; Oyserman et al., 2004, 2006). It is expected that these findings will be replicated in the present study.

**Research Hypothesis 2: Strategies mediate the relationship between academic possible selves and academic outcomes.**

Previous studies support a relationship between academic possible selves and academic outcomes when adolescents use strategies (e.g., spending time studying) to attain academic possible selves (Oyserman, 2008; Oyserman et al., 2004, 2006). It is hypothesized that strategy use will mediate the relationship between these two constructs. The strategy being assessed in the present study is time spent in homework.

**Research Hypothesis 3: Identity styles are related to academic outcomes.**

Research supports a relation between identity styles and academic outcomes (Berzonsky & Kuk, 2005; Boyd et al., 2003, Hejazi et al., 2009). Most of these studies, however, examined college-aged adolescents. It is hypothesized that in a sample of high school aged students:

3a) Informational identity style will be positively correlated with academic outcomes.

3b) Normative identity style will be positively correlated with academic outcomes.

3c) Diffuse-avoidant identity style will be negatively correlated with academic outcomes.

**Research Hypothesis 4: Identity styles are related to academic possible selves.**

With the exception of Dunkel (2000) and Dunkel and Anthis (2001), few studies have been conducted on the relation of identity styles and possible selves. Based on the notion that possible selves are expressions of identity exploration and that informational and normative styles represent two forms of exploration while diffuse-avoidant style involves ineffective exploration or actual avoidance of exploration:

4a) Informational identity style will be positively related to academic possible selves.

4b) Normative identity style will be positively related to academic possible selves.

4c) Diffuse-avoidant identity style will be negatively related to academic possible selves.

**Research Hypothesis 5: Academic possible selves mediate the relationship between identity styles and academic outcomes.**

The following mediation hypotheses are proposed:

5a) Academic possible selves will mediate the relationship between informational identity style and academic attitudes and performance.

5b) Academic possible selves will mediate the relationship between normative identity style and academic attitudes and performance.

5c) Academic possible selves will mediate the relationship between diffuse-avoidant identity style and academic attitudes and performance.

**Research Hypothesis 6: There are gender and ethnic differences in the reports of possible selves, identity styles, strategies, academic outcomes, or the relations among these constructs.**

Research suggests that girls can be expected to outperform boys academically, to hold more positive academic possible selves, and to show more use of an informational identity style than boys. Boys are expected to be more likely to report a diffuse-avoidant identity style. No predictions are made for the normative identity style. We speculate that girls will show a stronger relationship between identity styles and academic outcomes than boys.

As for ethnic differences, it is expected that European-Americans will report more use of the informational identity style, and African-Americans will report more use of the normative identity style. No predictions are made in terms ethnic differences in academic possible selves or the relationship between academic attitudes and performance.

III. Method

**Participants**

Data were collected from 1,431 high school students from 24 public schools across the State of Alabama. All students were taking a health class required by the State. Data collected from these students resulted in a sample representative of the State's public high school demographic composition. A total of 294 participants were dropped from the data set due to one or more of the following conditions: there were clear indications of invalid or inconsistent data, data were missing across all variables important to this study, or self-reported ethnic background was other than White/European-American or Black/African-American. The final sample consisted of 1,137 high school students ranging from 13-21 years old ($M = 15.64$; $SD = .95$). The sample was 53% female and 52% Black/African-American. Furthermore, 30% of participants were in the ninth grade, 57% were in the 10th grade, 10% were in the 11th grade, and 3% were in the 12th grade.

A total of 51% of participants reported receiving free or reduced lunch, suggesting that the sample over-represents the State's economically distressed population. Table 1 shows the educational attainment of participant's parents, and Table 2 presents descriptions of the diverse family structures inhabited by participants. (Tables for the Methods section are found at the end of the section).

A series of chi-square and t-tests analyses revealed significant differences between the 1,137 participants that were kept for the analysis and the 294 that were dropped. Participants

who were eligible to receive free or reduced lunch were slightly more likely to be dropped , $\chi^2$ (1, $N$ = 1431) = 4.207, $p$ < .05. T-test analyses revealed that students with the following attributes also were more likely to be dropped: higher levels of diffuse-avoidant identity style, more negative academic attitudes, lower expectations for their educational attainment, lower hoped-for possible selves, and higher feared possible selves (see Table 3 for means, standard deviations, and effect sizes of these comparisons). Although there was a clear pattern suggesting that less academically motivated students were excluded from this analysis, the differences were generally quite small. No group differences were found for grade in school, typical grades, parents' marital status, parents' levels of education, paid parental employment, attendance of religious services or level of informational and normative identity styles.

**Procedure**

Data were collected as part of a five-year evaluation project known as Healthy Couples Healthy Children: Targeting Youth (HCHCTY). HCHCTY was funded by the Administration for Children and Families/U.S Department of Health and Human Services, Office of Planning, Research, and Evaluation, the Children's Trust Fund of Alabama and Alabama's Department of Child Abuse and Neglect Prevention. The purpose of HCHCTY is to evaluate the effectiveness of a youth-focused relationship education curriculum called *Relationship Smarts Plus* (RS+; Pearson, 2007). This curriculum is designed to improve knowledge of healthy relationships and strategies for avoiding negative relationships. Data were obtained from participants before implementation of the RS+ curriculum and again after RS+ curriculum implementation. The present study uses pre-curriculum data only.

All participants completed a self-report survey in class administered by their teacher. Participants were assigned a participant number in order to maintain their confidentiality and to

link to their survey responses. Informed parental consent and student assent were obtained from research participants in HCHCTY.

**Measures**

  **Demographics**. Participants self-reported their gender, ethnicity and other demographic attributes.

  **Identity styles**. The three identity styles were measured with the *Identity Style Inventory-Version 4* (ISI-4; Smits, 2009). Seven items of this measure assessed the informational identity style (i.e., actively involved in identity exploration), eight items assessed the normative identity style (i.e., exploring one's identity through others' expectations), and the diffuse-avoidant identity style (i.e., avoiding identity exploration) were assessed by nine items. Items were rated on a 5-point scale ranging from 1 (*Not at all like me*) to 5 (*Very much like me*). Therefore, for an individual to score high on informational identity style items indicate that he/she carefully evaluates different alternatives before making important life decisions. To score high on normative identity style items indicates that such individuals generally adopt values and beliefs from significant others, whereas to score high on diffuse-avoidant identity style items shows that such individuals tend to delay making important life decisions.  Smits (2009) when using this measure on a US and Dutch sample reported reliabilities of .71 (informational), .78 (normative), and .82 (diffuse-avoidant) for her US sample, and reliabilities of .76 (informational), .69 (normative), and .77 (diffuse-avoidant) for her Dutch sample. In the present study, the informational style had a reported reliability of 0.78; the normative style had a reliability of 0.73; and the diffuse-avoidant style had a reliability of 0.81. Therefore, reliabilities of the present study are consistent with reliabilities reported in previous studies using this measure. See Appendix A for items.

**Academic possible selves**. Although a common assessment strategy for possible selves is an open-ended format whereby participants list as many hoped-for, expected, and feared possible selves they can (Cross & Markus, 1991; Knox et al., 2000), in order to limit burden and minimize the time required for data collection, a different procedure was used for this study. Possible selves in the present study were assessed through 12-pre-determined statements focused specifically on academic possible selves that participants rated on 5-point Likert-type scales. Six items measured academic possible selves for finishing high school, and the remaining six items measured academic possible selves for academic success indexed by grades. All twelve items are shown in Appendix A. In each set, three items assessed hoped-for academic possible selves and three assessed feared academic possible selves. An additional indicator of hoped for academic possible selves was a single item tapping expected educational attainment. This item was rated on a 5-point scale ranging from 1 (*less than high school*) to 5 (*advanced degree beyond college*) to indicate the amount of education the respondent would have by the time their education was complete. Therefore to score high on hoped for academic possible selves indicates that individuals hold high hopes and expectations for finishing high school and getting good grades and also expect to complete a high level of education after finishing high school. Whereas to score high on feared academic possible selves indicates that such individuals have low expectations when it comes to earning good grades and finishing high school. However feared academic possible selves were reversed coded so that higher scores would indicate more positive academic possible self-views. Therefore, to score high on both hoped-for and feared academic possible selves items indicates that such individuals feel confident about getting good grades and finishing high school and expect a high level of education past high school. Cronbach alphas for hoped-for academic possible selves were 0.78 for finishing high school and and 0.85 for getting

good grades and for feared academic possible selves they were 0.82 for finishing high school and 0.70 for getting good grades.

**Time spent on homework**. The single item: "How many hours a week do you usually spend doing homework?" (Oyserman et al., 2006) assessed a relevant strategy that students could use to promote their hoped-for, and to avoid their feared, possible selves. Participants answered this question on a 6-point scale ranging from *0 hours a week* to *more than 10 hours a week*. The 6 units of the scale were not of equal size. High scores on this item indicate that participants put in more hours in completing their homework assignments.

**Grades**. Academic performance in the present study was indexed by participants' self-reported grades. Participants' grades were self-reported on a 7-point scale ranging from 1 (*All A's*) to 7 (*Mostly D's or less*) to reflect the grades they mostly make in their academic classes. This item was reverse coded so that higher scores indicated higher grades. Therefore, high scores on this item indicate that participants make good grades in their academic classes.

**Academic attitudes**. Three items were used to assess the positivity of participants' attitudes toward academic achievement. The last two items were reverse coded so that higher scores would indicate more positive academic attitudes. Questions came from the *Racelessness Scale* (RS; Fordham, 1988; Fordham & Ogbu, 1986) and were answered on a 5-point Likert-type scale (see Appendix A for items). Cronbach alpha was 0.59. Although this is a low alpha, it is important to note that cronbach alphas are generally sensitive to the number of items included in a scale (Arroyo and Zigler (1995) used this subscale in their study and reported a Cronbach alpha of .96). The average correlation among the three items was moderate at 0.34.

**Plan of Analysis**

Exploratory data analyses were conducted in order to examine the variance, distribution, and skewness of the variables in the data set. Variables were considered skewed if their skewness value was greater than 1.0. Results indicated that all but one of the academic possible selves' variables was skewed (see Table 4). The variables *hoped-for academic possible selves for finishing high school*, and *expected educational attainment* were so skewed that transformations did not normalize the distribution. On a scale of 1 (*strongly disagree*) to 5 (*strongly agree*), approximately 80% of the present study's sample reported "strong agreement" on the item for finishing high school. Therefore, this item was dichotomized so that 1 indicated high hopes for completing high school (898 participants), and 0 indicated less than "strong agreement" about expectations for finishing high school (69 participants). An average of 84% of the sample stated that they expected a college level education or beyond for the expected educational attainment variable, which led to it being trichotomized as follows: 0 was assigned if expected educational attainment was less than college completion (173 participants), 1 for college completion (534 participants), and 2 for education beyond college (395 participants). All remaining skewed variables were transformed with inverse transformations, which yielded the lowest skewness value compared to other transformations.

Confirmatory factor analyses (CFA) in M+ (Muthén & Muthén, 2009) were used to fit observed variables to latent variables and to examine the relations among the latent variables. Specifics on these analyses are provided in the results section. Structural equation modeling (SEM) also in M+ was used to answer the present study's research questions and hypotheses. A series of models was fitted for each research question. When evaluating the fit of a model, a small chi square statistic ($\chi^2$) with a non-significant *p*-value indicates good fit. However, because

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the $\chi^2$ statistic is sensitive to sample size, other fit indices are also valuable. The Tucker-Lewis Index (TLI; also known as the Non-Normed Fit Index) and the Comparative Fit Index (CFI) indicate good fit with values between .95 and 1.00 and adequate fit with values between .90 and .95. These indices explain how much better the model fits compared to the baseline model (a model in which all observed variables are uncorrelated). The Root Mean Square Error of Approximation (RMSEA) indicates good fit with a non-significant value. An RMSEA value close to 0.06 is indicative of a good fit, but any value between 0.05 and 0.08 is indicative of adequate fit with a non-significant p-value. The Standardized Root Mean Square Residual (SRMR) indicates good fit with a value less than 0.05, and values less than 0.08 indicate adequate fit. The questions posed by this study and, therefore, the models fitted are largely nested models, meaning that, to the limits possible, each research question will introduce one or more additional variables to already presented and tested models.

Table 1. *Percentages of participants' reported education level for their parents* (*N* = 1,137).

| Education Level | Father (Father-Figure) | Mother (Mother-Figure) |
| --- | --- | --- |
| No Diploma | 12% | 9% |
| High School Diploma/GED | 44% | 40% |
| Junior College/Trade School | 11% | 16% |
| 4-year College | 16% | 22% |
| Advanced Degree Beyond College | 8% | 12% |
| No father-figure | 9% | |
| No mother-figure | | 1% |

Table 2. *Percentages of participants' family structure* (*N* = 1,137).

| | Parent's Marital/Relationship Status |
| --- | --- |
| Living together but not married | 4% |
| Married to each other | 42% |
| Divorced | 26% |
| Never married to each other and not living together | 21% |
| Other living arrangements | 7% |

Table 3. *Means, standard deviations, t-tests, and effect sizes for participants who were kept versus those who were dropped from analysis* ($N$ = 1,431).

| Variables | Keep $M$ | Drop $M$ | $SD$ | T-test | Effect Size |
|---|---|---|---|---|---|
| Diffuse-Avoidant Identity Style | 2.43 | 2.59 | .78 | 2.91[**] | .21 |
| Academic Attitudes | 4.20 | 4.07 | .81 | -2.21[*] | .16 |
| Educational Attainment | 4.10 | 3.96 | .91 | -2.23[*] | .15 |
| Finishing High School Hoped Possible Selves | 4.75 | 4.64 | .67 | -2.32[*] | .16 |
| Finishing High School Feared Possible Selves | 1.82 | 1.99 | 1.13 | 2.07[*] | .15 |
| Getting Good Grades Hoped Possible Selves | 4.43 | 4.31 | .82 | -2.07[*] | .15 |
| Getting Good Grades Feared Possible Selves | 2.56 | 2.80 | 1.08 | 3.00[**] | .22 |

[*] $p < .05$, [**] $p < .01$

Table 4

*Descriptive statistics for academic possible selves, expected educational attainment, academic performance, time spent on homework, academic attitudes, identity styles, and inverse transformations (N = 1,137).*

| Variables | *M* | *SD* | Skewness |
|---|---|---|---|
| Finishing High School Hoped Possible Selves | 4.65 | .65 | -3.22 |
| Finishing High School Feared Possible Selves | 1.82 | 1.12 | 1.31 |
| Finishing High School Feared Possible Selves_Inverse Transformation | .28 | .06 | -.73 |
| Getting Good Grades Hoped Possible Selves | 4.43 | .81 | -1.60 |
| Getting Good Grades Hoped Possible Selves_Inverse Transformation | .77 | .27 | -.55 |
| Getting Good Grades Feared Possible Selves | 2.56 | 1.07 | .34 |
| Educational Attainment | 4.10 | .90 | -1.09 |
| Grades | 3.38 | 1.49 | .35 |
| Time Spent on Homework | 1.94 | 1.24 | .27 |
| Academic Attitudes | 4.20 | .80 | -1.07 |
| Academic Attitudes_Inverse Transformation | .66 | .26 | .16 |
| Informational Identity Style | 3.73 | .69 | -.70 |

Table 4. (continues).

Table 4. (continued).

| Variables | *M* | *SD* | Skewness |
|---|---|---|---|
| Normative Identity Style | 2.92 | .72 | .00 |
| Diffuse-Avoidant Identity Style | 2.43 | .78 | .20 |

IV. RESULTS

A latent variable was created for each identity style. Each latent variable was indicated by two packets created from items that had loaded together in exploratory factor analyses (see Appendix B). For modeling academic possible selves, a second-order latent construct was created whereby two latent variables were treated as unobserved indicators of the second order construct. The first of these unobserved latent variables was labeled hoped-for academic possible selves and was indicated by hopes related to getting good grades, finishing high school, and a high level of anticipated educational attainment. The second unobserved latent variable, feared academic possible selves, was indicated by fears of getting bad grades and failing to finish high school. Confirmatory factor analyses (CFA) fitting all five latent variables simultaneously and estimating the intercorrelations among them revealed a significant chi-square, but the remaining indices indicated adequate-to-good fit. The informational identity style was significantly correlated with the normative identity style ($r = .27, p < .001$), but negatively related to the diffuse-avoidant identity style ($r = -.31, p < .001$). The normative identity style was positively correlated with the diffuse-avoidant identity style ($r = .08, p < .05$). Furthermore, academic possible selves were positively related with the informational identity style ($r = .52, p < .001$) and the normative identity style ($r = .12, p < .01$), but were negatively related with the diffuse-avoidant identity style ($r = -.63, p < .001$). See Figure 1 and Table 5. All Tables and Figures for the Results section are presented in the order they are discussed at the end of the

Results section beginning on page 63. Fit statistics are shown for each model in the Figure and at the end of the Table. They are not repeated in the text.

**Research Hypothesis 1: Identity styles are related to academic possible selves.**

Using SEM, the second-order latent variable for academic possible selves was regressed on the three latent variables for identity styles in order to test whether identity styles are related to academic possible selves. Results shown in Figure 2 and Table 6 indicated adequate fit to the data. As expected, the informational identity style was positively, and diffuse-avoidant identity style was negatively, related to academic possible selves. Normative identity style, however, was not related to academic possible selves when the other two styles were statistically controlled.

**Research Hypothesis 2: Academic possible selves are related to academic outcomes.**

When academic outcomes were created as a latent construct indicated by grades and academic attitudes, a correlation greater than one was indicated between this latent variable and academic possible selves ($r = 1.38$, $p < .001$). Therefore, academic outcomes were not treated as a single latent variable but as two separate observed variables. Two models were fitted to examine whether academic possible selves were related (a) to academic performance indexed by grades and (b) to academic attitudes. Three of five indices indicated the first model to be an adequate fit to the data (see Figure 3 and Table 7). Academic possible selves were significantly and positively related to grades.

Results of the second model, shown in Figure 4 and Table 8, also indicated adequate fit. Although the chi-square was significant, all other indices were consistent with adequate fit. Academic possible selves were significantly and positively related to more favorable academic attitudes. (Note that the relation between normative identity style and academic possible selves became significant when either grades or academic attitudes were included in the model. It had

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been non-significant in the test of Hypothesis 1 regarding the relation between styles and academic possible selves).

**Research Hypothesis 3: Strategies mediate the relationship between academic possible selves and academic outcomes.**

The effects of the strategy, time spent on homework, was tested as a mediator to the relationship of academic possible selves and academic outcomes. This was tested following Baron and Kenny (1986) mediation hypothesis testing:

a) The predictor (academic possible selves) explains variance in the mediator (time spent on homework).

b) The mediator (time spent on homework) explains variance in the outcome (academic outcomes).

c) The predictor (academic possible selves) explains variance in the outcome (academic outcomes).

d) The predictor (academic possible selves) no longer explains variance in the outcome (academic outcomes) once the mediator (time spent on homework) is included in the model.

This series of tests was conducted twice, once for each academic outcome (grades and academic attitudes). Results of the first series of tests indicated that academic possible selves was significantly related to time spent on homework ($r = .47$, $p < .001$), and time spent on homework was significantly related to grades ($r = .24$, $p < .001$). Also, as previously shown (hypothesis 2), academic possible selves were significantly related to grades. However, the relationship between these two variables remained significant with time spent on homework included in the model (see Figure 5 and Table 9). Results of this model also showed that

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academic possible selves remained significantly related to time spent on homework, while time spent on homework was no longer significantly related to grades. This indicated that time spent on homework was not a mediator to the relationship of academic possible selves and grades. Further disconfirmation of the mediation hypothesis was obtained through a $\Delta\chi^2$ test that examined the impact on the model of fixing the path from academic possible selves to grades to zero. Results indicated an increase in the $\chi^2$ value much greater than the critical ratio of 3.84 for one degree of freedom clearly refuting the null hypothesis that the path from academic possible selves to grades is zero (see Table 10). The mediation hypothesis was not supported for grades. Therefore, the final model of this research question indicated that time spent on homework does not mediate the relationship between academic possible selves and grades and was shown to be an adequate fit to the data.

Next, time spent on homework was tested as a mediator to the relationship of academic possible selves and academic attitudes. It was previously demonstrated that academic possible selves was significantly related to time spent on homework and to academic attitudes (Hypothesis 2). Time spent on homework was also significantly related to academic attitudes ($r = .13, p < .001$). With time spent on homework included in the model as a mediator, the relationship between academic possible selves and both time in homework and academic attitudes remained significant, but time spent on homework, while significantly related to academic attitudes, became negative (see Table 11 and Figure 6). This model showed adequate fit to the data. A $\Delta\chi^2$ test confirmed that time spent on homework was not a mediator of the effect of academic possible selves on academic attitudes. When the path of academic attitudes regressed on academic possible selves was set to zero, the $\Delta\chi^2$ of 207.98 greatly exceeded the

critical value of 3.84 for one degree of freedom and led to the rejection of the null hypothesis that the path from academic possible selves to academic attitudes is zero (see Table 12).

**Research Hypothesis 4: Identity styles are related to academic outcomes.**

Two models were fitted to answer this research question. In the first, grades were regressed on all three identity styles. This model shown in Figure 7 and Table 13 fitted the data adequately. Results also showed that all three identity styles were significantly related to grades in their expected directions; both informational and normative identity styles were positively related to grades, whereas the diffuse-avoidant identity style was related negatively to grades.

In the second model, academic attitudes were regressed on the three identity styles. Again, the model fit the data adequately. The identity styles were all significantly related to academic attitudes in their expected directions; both informational and normative identity styles were positively related to academic attitudes and diffuse-avoidant identity style was negatively related to this variable (see Figure 8 and Table 14).

**Research Hypothesis 5: Academic possible selves mediate the relationship between identity styles and academic outcomes.**

The effects of academic possible selves were tested as a mediator to the relationship of identity styles and academic outcomes using the Baron and Kenny (1986) procedure. As previously shown, the informational and diffuse-avoidant identity styles were significantly related to academic possible selves (Hypothesis 1), academic possible selves were significantly related to both grades and academic attitudes (Hypothesis 2), and identity styles were related to both grades and academic attitudes (Hypothesis 4). So therefore, the conditions for potential mediation were met for identity styles (with the exception of the normative identity style), academic possible selves, and grades and academic attitudes.

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With academic possible selves included as a mediator to the relationship of identity styles and grades, both the informational and diffuse-avoidant identity styles remained significantly related to grades, thus the mediation hypothesis was not supported in the prediction of grades (see Figure 9 and Table 15). A series of $\Delta\chi^2$ tests provided further disconfirmation of the mediation hypothesis. The paths of academic performance regressed on the informational and diffuse-avoidant identity styles were set to zero one at a time. The $\Delta\chi^2$ was statistically significant in each test (see Table 16). Therefore, although the final model for this research question fit the data adequately, the mediation tests clearly indicated that academic possible selves are not mediators to the relationship of identity styles and grades.

The paths in Figure 9 show unexpected results. The previous positive relationship between the informational identity style and grades became negative and the previous negative relationship between the diffuse-avoidant identity style and grades became positive when academic possible selves were included in the model as a mediator. These sign reversals occurred because of the very strong correlation between academic possible selves and grades ($r = 1.08$, $p < .001$). Academic possible selves explained most of the variance in grades. When the unexplained variance component for grades was regressed on the identity processing styles, they were related to styles in the opposite direction from expectations. The following equations allow the full unstandardized parameter estimates for the three identity styles to be recalculated:

(1) Grades = 4.617 + 9.664APS - .605Info + .000Norm + .704Diff
(2) Academic possible selves = 15.390 + .101Info + .010Norm - .141Diff

Substituting equation 2 into equation 1:

(3) Grades = 4.617 + 9.664(15.390 + .101Info + .010Norm - .141Diff) - .605Info + .000Norm + .704Diff

In the third equation, the unstandardized coefficient for academic possible selves ($\beta$ =

9.66, $p < .001$) was multiplied by the unstandardized coefficients of the three identity styles

when grades were regressed on them. This value was in turn either added or subtracted by the

unstandardized coefficients of the three identity styles when academic possible selves were

regressed on them. When this equation is worked out, the true unstandardized relationships for

grades regressed on the three identity styles were $\beta$ = .37, for the informational identity style; $\beta$ =

.10, for the normative identity style; and $\beta$ = -.66, for the diffuse-avoidant identity style.

Next academic possible selves were tested as a mediator to the relationship of identity

styles and academic attitudes. The conditions for potential mediation as documented in the

beginning of this section were met for all three styles. Results showed that the informational and

diffuse-avoidant identity styles were no longer significantly related to academic attitudes once

academic possible selves were included in the model as a mediator, whereas the normative

identity style remained significantly related to academic attitudes. A series of $\Delta\chi^2$ tests were then

conducted. The paths of academic attitudes regressed on the identity styles were set to zero one

at a time. Results from the $\Delta\chi^2$ tests indicated that academic attitudes were unrelated to

informational and diffuse-avoidant identity styles when academic possible selves were included

as a mediating variable (see Table 17). It appears that academic possible selves mediated the

relationship of the informational and diffuse-avoidant identity styles and academic attitudes.

Therefore, the final model chosen for this research question was when the paths of both

informational and diffuse-avoidant identity styles to academic attitudes were set to zero (see

Figure 10 and Table 18). This model fit the data adequately.

**Research Hypothesis 6: There are gender and ethnic differences in the reports of possible**

**selves, identity styles, academic outcomes, or the relations among these constructs.**

A total of four models were fitted to examine these hypotheses. The first two models examined gender and ethnic differences with grades as the outcome variable, and the next two models examined gender and ethnic differences with academic attitudes as the outcome variable. Where previous mediation effects were supported, they were modeled in these comparisons as well (i.e., the paths from informational and diffuse-avoidant identity styles to academic attitudes where set to zero). In each model, all paths were originally constrained to be equal across groups, and then, one at a time, paired structural paths were unconstrained across groups to examine group differences using $\Delta\chi^2$ tests.

**Grades.**

**Gender differences**. There were no gender differences in structural parameters in the model predicting grades (see Table 19). However, girls reported higher levels of informational identity style and lower levels of diffuse-avoidant identity style than boys. Therefore, the final model chosen for this research question was when all paths were constrained to be equal across boys and girls (see Table 20). Furthermore, model fit was adequate.

**Ethnic differences**. The $\Delta\chi^2$ tests indicated that European-Americans and African-Americans differed on only one structural parameter. The normative identity style was unexpectedly significantly related to academic possible selves for European-Americans but not for African-Americans (see Table 21). Consistent with expectations, however, group mean differences revealed that African-Americans endorsed higher levels of normative identity style than European-Americans (see Table 22). The final model comparing the ethnicities included the different structural parameter for the two groups and fitted the data adequately.

**Academic attitudes.**

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**Gender differences**. The $\Delta\chi^2$ tests revealed no structural differences between the genders in the model predicting academic attitudes (see Table 23). The same mean differences for the informational and diffuse-avoidant identity styles between the genders found in the previous model were replicated here. They are not new. Girls reported higher levels of informational identity style and lower levels of a diffuse-avoidant identity style than boys (see Table 24). Therefore, the final model for this research question constrained all paths to be equal across boys and girls, and fit the data adequately

**Ethnic differences**. The same path that differed between European-Americans and African-Americans in the model for grades was replicated in this model. It is not new. The normative identity style was significantly related to academic possible selves for European-Americans but not for African-Americans (see Table 25). Again, African-Americans had higher levels of a normative identity style than European-Americans (see Table 26). The fit of the final comparison model with the path that differed across both groups was adequate.
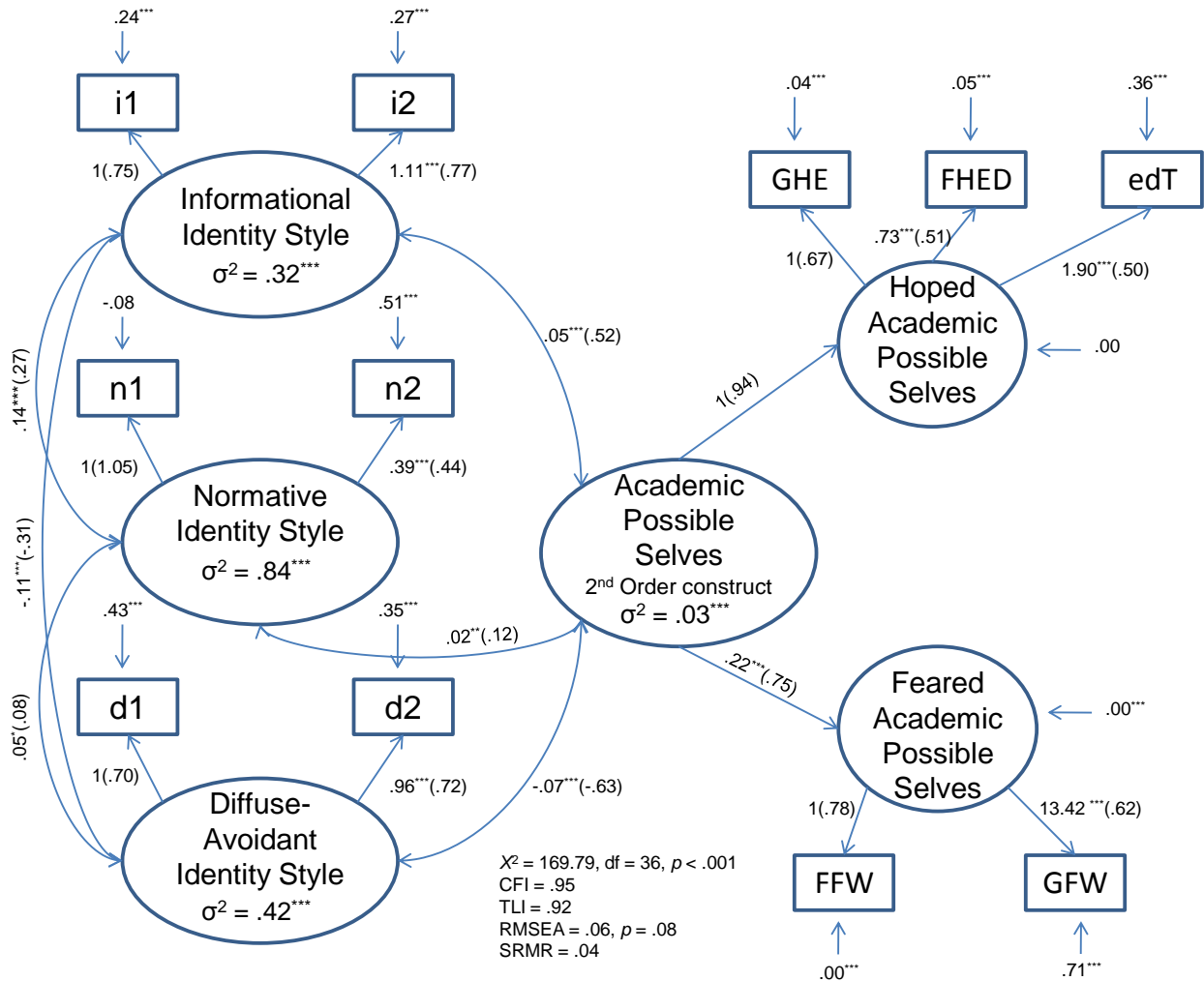
*Figure 1*. Confirmatory factor analysis for three identity styles and 2nd order factor for academic possible selves. Non-standardized regression coefficients and standardized coefficients and R-Squares in parentheses (*N* = 1,137).

*Note*. i1 (Informational Identity Style-Packet 1); i2 (Informational Identity Style-Packet 2); n1 (Normative Identity Style-Packet 1); n2 (Normative Identity Style-Packet 2); d1 (Diffuse-Avoidant Identity Style-Packet 1); d2 (Diffuse-Avoidant Identity Style-Packet 2); GHE (Hoped Possible Selves for Getting Good Grades); FHED (Hoped Possible Selves for Finishing High School-Dichotomize); edT (Expected Educational Attainment-Trichotomized); FFW (Feared Possible Selves for Finishing High School); GFW (Feared Possible Selves for Getting Good Grades).

Table 5. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics, for confirmatory factor analysis of identity styles and 2nd order academic possible selves (N = 1,137).*

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Informational style by | | | |
| Packet 1 | 1.000 | 0.000 | 0.751*** |
| Packet 2 | 1.112 | 0.082 | 0.770*** |
| | | | |
| Normative style by | | | |
| Packet 1 | 1.000 | 0.000 | 1.054*** |
| Packet 2 | 0.387 | 0.089 | 0.445*** |
| | | | |
| Diffuse-Avoidant style by | | | |
| Packet 1 | 1.000 | 0.000 | 0.704*** |
| Packet 2 | 0.958 | 0.080 | 0.724*** |
| | | | |
| Hoped for possible selves by | | | |
| GHE | 1.000 | 0.000 | 0.670*** |
| FHED | 0.732 | 0.064 | 0.511*** |
| edT | 1.903 | 0.162 | 0.499*** |
| | | | |
| Feared possible selves by | | | |
| FFW | 1.000 | 0.000 | 0.781*** |
| GFW | 13.417 | 1.039 | 0.623*** |
| | | | |
| Academic possible selves by | | | |
| HE | 1.000 | 0.000 | 0.939*** |
| FW | 0.220 | 0.019 | 0.750*** |
| | | | |
| Normative with | | | |
| Informational | 0.140 | 0.018 | 0.272*** |
| | | | |
| Diffuse-Avoidant with | | | |
| Informational | -0.115 | 0.018 | -0.313*** |
| Normative | 0.047 | 0.022 | 0.079* |
| | | | |
| Academic possible selves with | | | |
| Informational | 0.050 | 0.006 | 0.523*** |
| Normative | 0.019 | 0.006 | 0.120** |
| Diffuse-Avoidant | -0.070 | 0.007 | -0.631*** |
| | | | |
| Variances | | | |
| Informational | 0.316 | 0.030 | 1.000*** |
| Normative | 0.835 | 0.189 | 1.000*** |
| Diffuse-Avoidant | 0.425 | 0.045 | 1.000*** |
| Academic possible selves | 0.029 | 0.004 | 1.000*** |

Table 5. (continues).

Table 5. (continued).

|  | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Fit Statistics |  |  |  |
| $\chi^2$ | 169.70[***] |  |  |
| df | 36 |  |  |
| CFI | 0.95 |  |  |
| TLI | 0.92 |  |  |
| RMSEA | 0.06 |  |  |
| SRMR | 0.04 |  |  |

*Note*. GHE (Getting Good Grades Hoped Possible Selves); FHED (Finishing High School Hoped Possible Selves-Dichotomized); edT (Expected Educational Attainment-Trichotomized); FFW (Finishing High School Feared Possible Selves); GFW (Getting Good Grades Feared Possible Selves). HE (Hoped-for Possible Selves); FW (Feared Possible Selves); [*]$p < .05$, [**]$p < .01$ [***]$p < .001$.
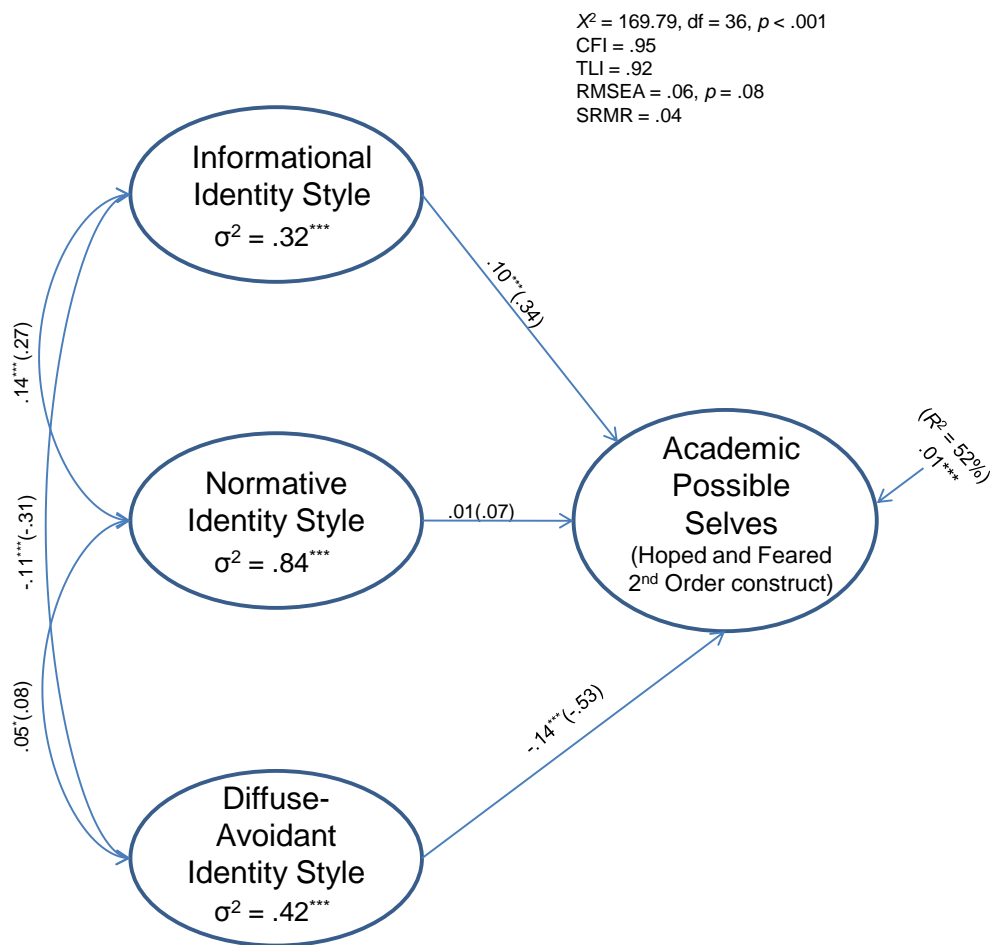
*Figure 2*. Fitted Path Diagram: Academic possible selves regressed on identity styles. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses (*N* = 1,137).

Table 6. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for*

*academic possible selves regressed on identity styles* ($N = 1,137$).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| **Academic Possible selves on** | | | |
| Informational | 0.102 | 0.015 | 0.338[***] |
| Normative | 0.013 | 0.007 | 0.070 |
| Diffuse-avoidant | -0.138 | 0.014 | -0.531[***] |
| **Variances** | | | |
| Informational | 0.316 | 0.030 | 1.000[***] |
| Normative | 0.835 | 0.188 | 1.000[***] |
| Diffuse-Avoidant | 0.425 | 0.045 | 1.000[***] |
| **R-Squares** | | | |
| APS | 0.520 | | |
| **Fit Statistics** | | | |
| $\chi^2$ | 169.70[***] | | |
| df | 36 | | |
| CFI | 0.95 | | |
| TLI | 0.92 | | |
| RMSEA | 0.06 | | |
| SRMR | 0.04 | | |

*Note*. APS (Academic possible selves); [***]$p < .001$

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*Figure 3*. Fitted Path Diagram: Grades regressed on academic possible selves. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1,137$).

Table 7. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for grades regressed on academic possible selves* (N = 1,137).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Academic possible selves on | | | |
| Informational | 0.089 | 0.014 | 0.286[***] |
| Normative | 0.013 | 0.007 | 0.069[*] |
| Diffuse-Avoidant | -0.132 | 0.014 | -0.480[***] |
| | | | |
| Grades on | | | |
| Academic possible selves | 5.895 | 0.370 | 0.695[***] |
| | | | |
| Variances | | | |
| Informational | 0.320 | 0.031 | 1.000[***] |
| Normative | 0.856 | 0.199 | 1.000[***] |
| Diffuse-Avoidant | 0.408 | 0.044 | 1.000[***] |
| | | | |
| R-Squares | | | |
| Grades | 0.483 | | |
| APS | 0.407 | | |
| | | | |
| Fit Statistics | | | |
| $\chi^2$ | 248.96[***] | | |
| df | 46 | | |
| CFI | 0.93 | | |
| TLI | 0.90 | | |
| RMSEA | 0.06[**] | | |
| SRMR | 0.04 | | |

[*]$p < .05$, [**]$p < .01$, [***]$p < .001$

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*Figure 4.* Fitted Path Diagram: Academic attitudes regressed on academic possible selves. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses (*N* = 1,137).

Table 8. *Standardized and unstandardized parameter estimates, standard errors, R-Squares, and fit statistics for academic attitudes regressed on academic possible selves (N = 1,137).*

|  | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Academic possible selves on |  |  |  |
| Informational | 0.104 | 0.015 | 0.333[***] |
| Normative | 0.019 | 0.008 | 0.100[**] |
| Diffuse-Avoidant | -0.144 | 0.014 | -0.546[***] |
| Academic attitudes on |  |  |  |
| Academic possible selves | 0.771 | 0.060 | 0.533[***] |
| Variances |  |  |  |
| Informational | 0.320 | 0.030 | 1.000[***] |
| Normative | 0.846 | 0.188 | 1.000[***] |
| Diffuse-Avoidant | 0.449 | 0.045 | 1.000[***] |
| R-Squares |  |  |  |
| Academic Attitudes | 0.284 |  |  |
| APS | 0.543 |  |  |
| Fit Statistics |  |  |  |
| $\chi^2$ | 191.08[***] |  |  |
| df | 46 |  |  |
| CFI | 0.95 |  |  |
| TLI | 0.92 |  |  |
| RMSEA | 0.05 |  |  |
| SRMR | 0.04 |  |  |

[**] $p < .01$, [***] $p < .001$

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*Figure 5*. Fitted Path Diagram: Time spent on homework mediating the relationship of grades regressed on academic possible selves. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1{,}137$).

Table 9. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for time spent on homework mediating the relationship of grades regressed on academic possible selves* ($N = 1,137$).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| **Academic possible selves on** | | | |
| Informational | 0.091 | 0.014 | 0.302*** |
| Normative | 0.011 | 0.006 | 0.058 |
| Diffuse-Avoidant | -0.129 | 0.014 | -0.479*** |
| **Grades on** | | | |
| Academic possible selves | 5.853 | 0.415 | 0.680*** |
| **Homework on** | | | |
| Academic possible selves | 3.384 | 0.294 | 0.469*** |
| **Grades on** | | | |
| Homework | 0.030 | 0.039 | 0.025 |
| **Variances** | | | |
| Informational | 0.324 | 0.031 | 1.000*** |
| Normative | 0.865 | 0.207 | 1.000*** |
| Diffuse-Avoidant | 0.414 | 0.044 | 1.000*** |
| **R-Squares** | | | |
| Homework | 0.220 | | |
| Grades | 0.480 | | |
| APS | 0.419 | | |
| **Fit Statistics** | | | |
| $\chi^2$ | 284.30*** | | |
| df | 56 | | |
| CFI | 0.93 | | |
| TLI | 0.90 | | |
| RMSEA | 0.06** | | |
| SRMR | 0.04 | | |

** $p < .01$, *** $p < .001$.

Table 10. *Test of mediation: Comparing model fit when the relation between academic possible selves and grades is unconstrained versus constrained to zero (N = 1,137).*

| Parameter constrained to zero | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| No constraints | 284.297 | 56 | | | |
| Path from Academic Possible Selves to Grades | 608.820 | 57 | 324.523 | 1 | 3.84 |

$X^2 = 222.57$, df = 56, $p < .001$
CFI = .94
TLI = .92
RMSEA = .05, $p = .38$
SRMR = .04

Informational Identity Style
$\sigma^2 = .33^{***}$

Normative Identity Style
$\sigma^2 = .88^{***}$

Diffuse-Avoidant Identity Style
$\sigma^2 = .45^{***}$

Academic Possible Selves (Hoped and Feared 2nd Order construct)

Academic Attitudes

Time spent on homework

$.10^{***}(.35)$

$.01^{*}(.08)$

$-.14^{***}(-.54)$

$(R^2 = 54\%)$ $.01^{***}$

$.86^{***}(.57)$

$(R^2 = 29\%)$ $.05^{***}$

$3.33^{***}(.47)$

$-.02^{*}(-.09)$

$1.21^{***}$ $(R^2 = 22\%)$

$-.12^{***}(-.31)$

$.14^{***}(.26)$

$.04(.07)$
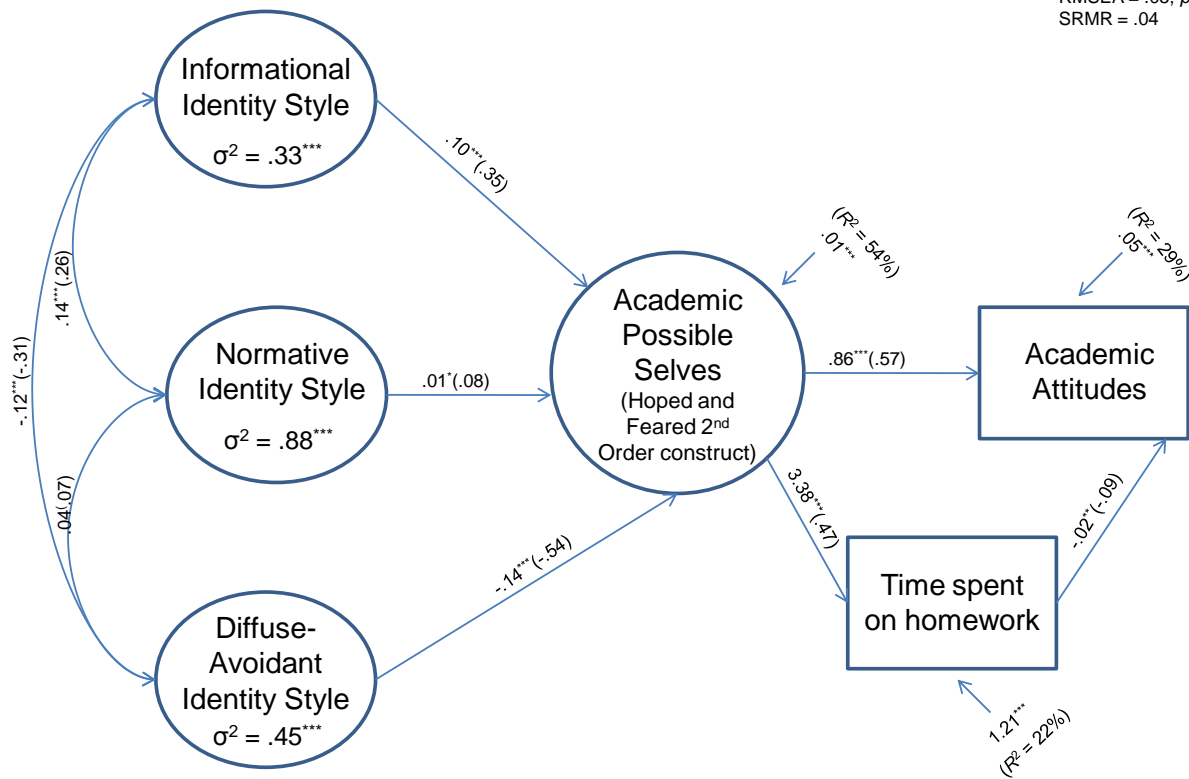
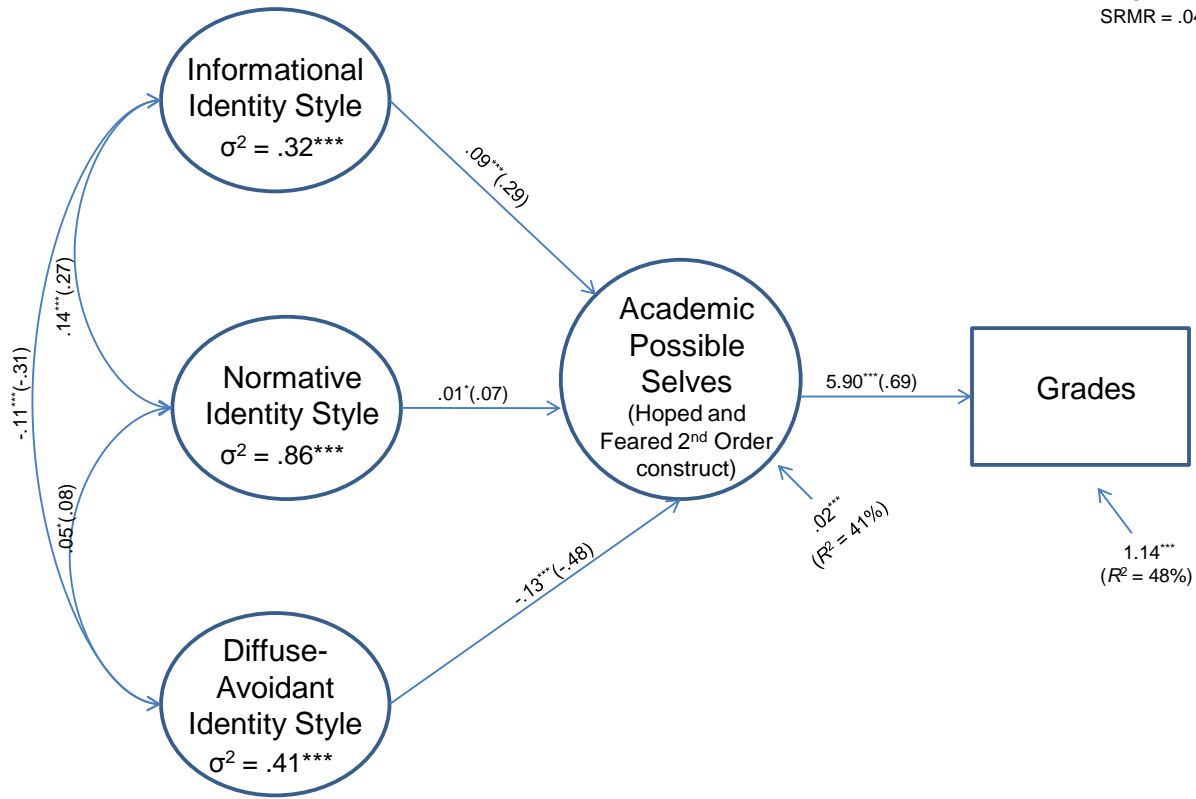*Figure 6*. Fitted Path Diagram: Time spent on homework mediating the relationship of academic attitudes regressed on academic possible selves. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses (*N* = 1,137).

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Table 11. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for time spent on homework mediating the relationship of academic attitudes regressed on academic possible selves* ($N = 1,137$).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Academic possible selves on | | | |
| Informational | 0.105 | 0.014 | 0.349*** |
| Normative | 0.014 | 0.007 | 0.007* |
| Diffuse-Avoidant | -0.137 | 0.013 | -0.538*** |
| | | | |
| Academic Attitudes on | | | |
| Academic possible selves | 0.857 | 0.072 | 0.574*** |
| | | | |
| Homework on | | | |
| Academic possible selves | 3.385 | 0.301 | 0.468*** |
| | | | |
| Academic Attitudes on | | | |
| Homework | -0.019 | 0.007 | -0.091** |
| | | | |
| Variances | | | |
| Informational | 0.325 | 0.030 | 1.000*** |
| Normative | 0.877 | 0.208 | 1.000*** |
| Diffuse-Avoidant | 0.453 | 0.045 | 1.000*** |
| | | | |
| R-Squares | | | |
| Homework | 0.219 | | |
| Academic Attitudes | 0.289 | | |
| APS | 0.544 | | |
| | | | |
| Fit Statistics | | | |
| $\chi^2$ | 222.57*** | | |
| df | 56 | | |
| CFI | 0.94 | | |
| TLI | 0.92 | | |
| RMSEA | 0.05 | | |
| SRMR | 0.04 | | |

*$p < .05$, **$p < .01$ ***$p < .001$.

Table 12. *Test of mediation: Comparing model fit when the relation between academic possible selves and academic attitudes is unconstrained versus constrained to zero* ($N$ = 1,137).

| Parameter constrained to zero | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| No constraints | 222.569 | 56 | | | |
| Path from Academic Possible Selves to Academic Attitudes | 430.552 | 57 | 207.983 | 1 | 3.84 |

*Figure 7*. Fitted Path Diagram: Grades regressed on identity styles. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses (*N* = 1,137).

Table 13. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for grades regressed on identity styles* ($N = 1,137$).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| **Academic possible selves on** | | | |
| Informational | 0.101 | 0.015 | 0.341*** |
| Normative | 0.010 | 0.007 | 0.056 |
| Diffuse-Avoidant | -0.141 | 0.014 | -0.545*** |
| | | | |
| **Grades on** | | | |
| Informational | 0.375 | 0.103 | 0.141*** |
| Normative | 0.097 | 0.050 | 0.061* |
| Diffuse-Avoidant | -0.655 | 0.094 | -0.284*** |
| | | | |
| **Grades with** | | | |
| Academic possible selves | 0.124 | 0.010 | 0.790*** |
| | | | |
| **Variances** | | | |
| Informational | 0.313 | 0.030 | 1.000*** |
| Normative | 0.870 | 0.206 | 1.000*** |
| Diffuse-Avoidant | 0.416 | 0.044 | 1.000*** |
| | | | |
| **R-Squares** | | | |
| Grades | 0.131 | | |
| APS | 0.537 | | |
| | | | |
| **Fit Statistics** | | | |
| $\chi^2$ | 208.11*** | | |
| df | 43 | | |
| CFI | 0.94 | | |
| TLI | 0.91 | | |
| RMSEA | 0.06* | | |
| SRMR | 0.04 | | |

*$p < .05$, ***$p < .001$.

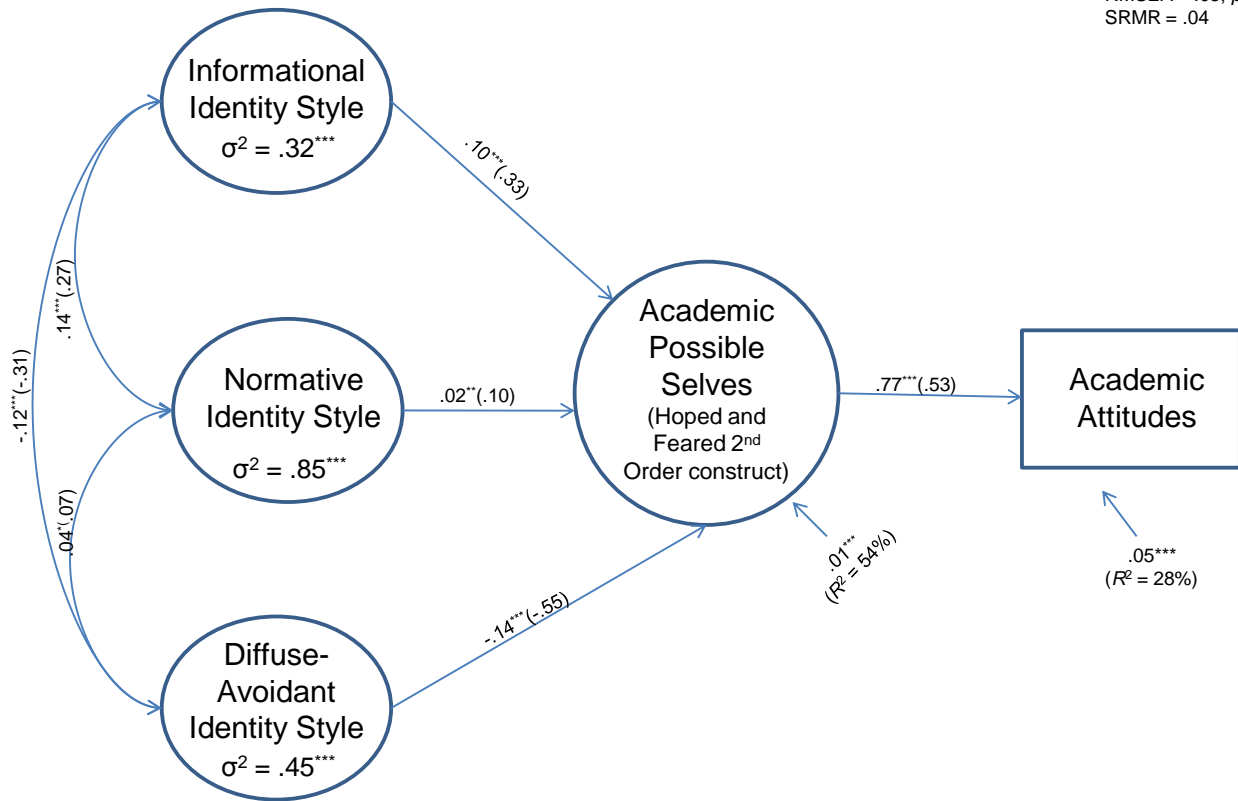*Figure 8*. Fitted Path Diagram: Academic attitudes regressed on identity styles. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1,137$).

Table 14. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for*

*academic attitudes regressed on academic possible selves* ($N = 1,137$).

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| **Academic possible selves on** | | | |
| Informational | 0.106 | 0.015 | 0.333*** |
| Normative | 0.015 | 0.008 | 0.077 |
| Diffuse-Avoidant | -0.139 | 0.014 | -0.518*** |
| **Academic Attitudes on** | | | |
| Informational | 0.071 | 0.018 | 0.156*** |
| Normative | 0.032 | 0.012 | 0.113** |
| Diffuse-Avoidant | -0.125 | 0.016 | -0.330*** |
| **Academic Attitudes with** | | | |
| Academic possible selves | 0.010 | 0.002 | 0.323*** |
| **Variances** | | | |
| Informational | 0.320 | 0.030 | 1.000*** |
| Normative | 0.810 | 0.167 | 1.000*** |
| Diffuse-Avoidant | 0.455 | 0.046 | 1.000*** |
| **R-Squares** | | | |
| Academic Attitudes | 0.183 | | |
| APS | 0.502 | | |
| **Fit Statistics** | | | |
| $\chi^2$ | 181.41*** | | |
| df | 43 | | |
| CFI | 0.95 | | |
| TLI | 0.92 | | |
| RMSEA | 0.05 | | |
| SRMR | 0.04 | | |

**$p < .01$, ***$p < .001$.

*Figure 9.* Fitted Path Diagram: Academic possible selves mediating the relationship of grades regressed on identity styles. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1,137$).

Table 15. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for academic possible mediating the relationship of grades regressed on identity styles (N = 1,137).*

|  | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| **Academic possible selves on** |  |  |  |
| Informational | 0.101 | 0.015 | 0.341*** |
| Normative | 0.010 | 0.007 | 0.056 |
| Diffuse-Avoidant | -0.141 | 0.014 | -0.545*** |
| **Grades on** |  |  |  |
| Academic possible selves | 9.664 | 1.089 | 1.082*** |
| Informational | -0.605 | 0.161 | 0.228*** |
| Normative | 0.000 | 0.053 | 0.000 |
| Diffuse-Avoidant | 0.704 | 0.190 | 0.305*** |
| **Variances** |  |  |  |
| Informational | 0.313 | 0.030 | 1.000*** |
| Normative | 0.870 | 0.206 | 1.000*** |
| Diffuse-Avoidant | 0.416 | 0.044 | 1.000*** |
| **R-Squares** |  |  |  |
| Grades | 0.670 |  |  |
| APS | 0.562 |  |  |
| **Fit Statistics** |  |  |  |
| $\chi^2$ | 208.11*** |  |  |
| df | 43 |  |  |
| CFI | 0.94 |  |  |
| TLI | 0.91 |  |  |
| RMSEA | 0.06* |  |  |
| SRMR | 0.04 |  |  |

*Note.* *$p < .05$, ***$p < .001$.

Table 16. *Test of mediation: Comparing model fit when the relations between identity styles and grades is unconstrained versus constrained to zero (N = 1,137).*

| Parameter constrained to zero | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| No constraints | 208.105 | 43 | | | |
| Path from Informational Identity Style to Grades | 228.805 | 44 | 20.7 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Grades | 231.670 | 44 | 23.565 | 1 | 3.84 |

Table 17. *Test of mediation: Comparing model fit when the relations between identity styles and academic attitudes is unconstrained versus constrained to zero (N = 1,137).*

| Parameter constrained to zero | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| No constraints | 181.410 | 43 | | | |
| Path from Informational Identity Style to Academic Attitudes | 181.586 | 44 | 0.176 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Attitudes | 190.211 | 45 | 8.625 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Academic Attitudes | 185.385 | 45 | 3.799 | 1 | 3.84 |

$X^2 = 185.39$, df = 45, $p < .001$
CFI = .95
TLI = .92
RMSEA = 05, $p = .24$
SRMR = .04

Informational Identity Style
$\sigma^2 = .32^{***}$

Normative Identity Style
$\sigma^2 = .83^{***}$

Diffuse-Avoidant Identity Style
$\sigma^2 = .45^{***}$

Academic Possible Selves
(Hoped and Feared 2nd Order construct)

Academic Attitudes

$(R^2 = 28\%)$

$.05^{***}$

.00(.00)

$.10^{***}(.33)$

$.02^*(.06)$

$.01^*(.08)$

.00(.00)

$.76^{***}(.52)$

$-.14^{***}(-.55)$

$.01^{***}$
$(R^2 = 54\%)$

$-.12^{***}(-.31)$

$.14^{***}(.27)$

$.04^*(.07)$

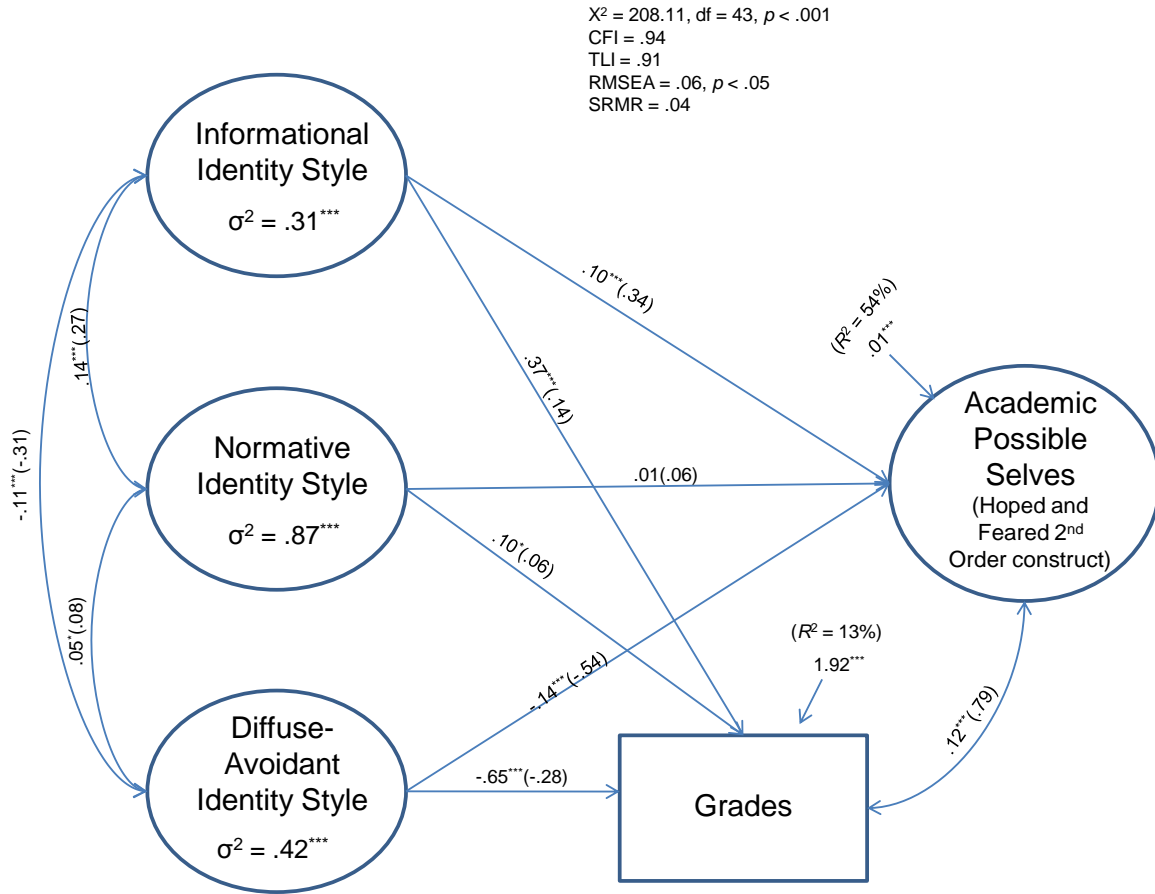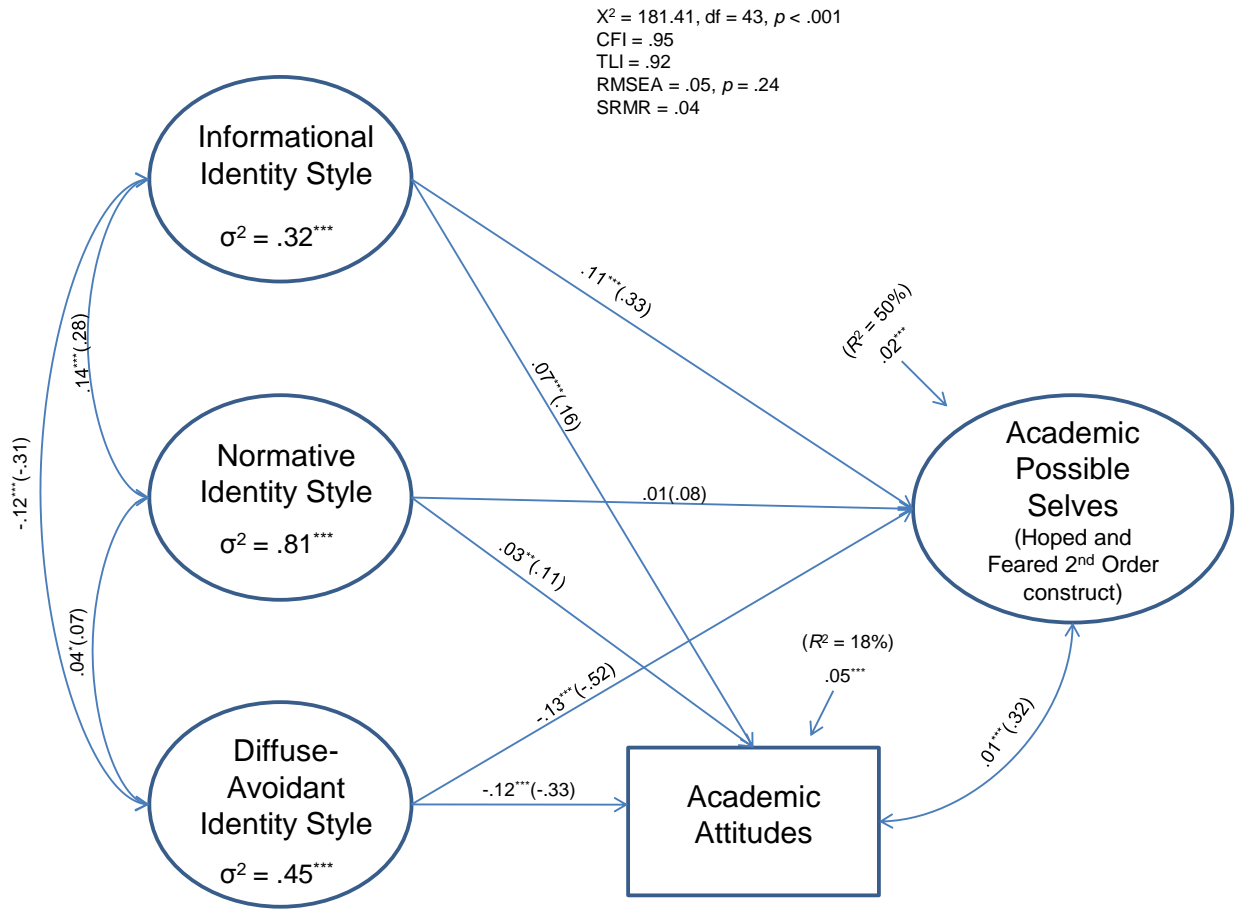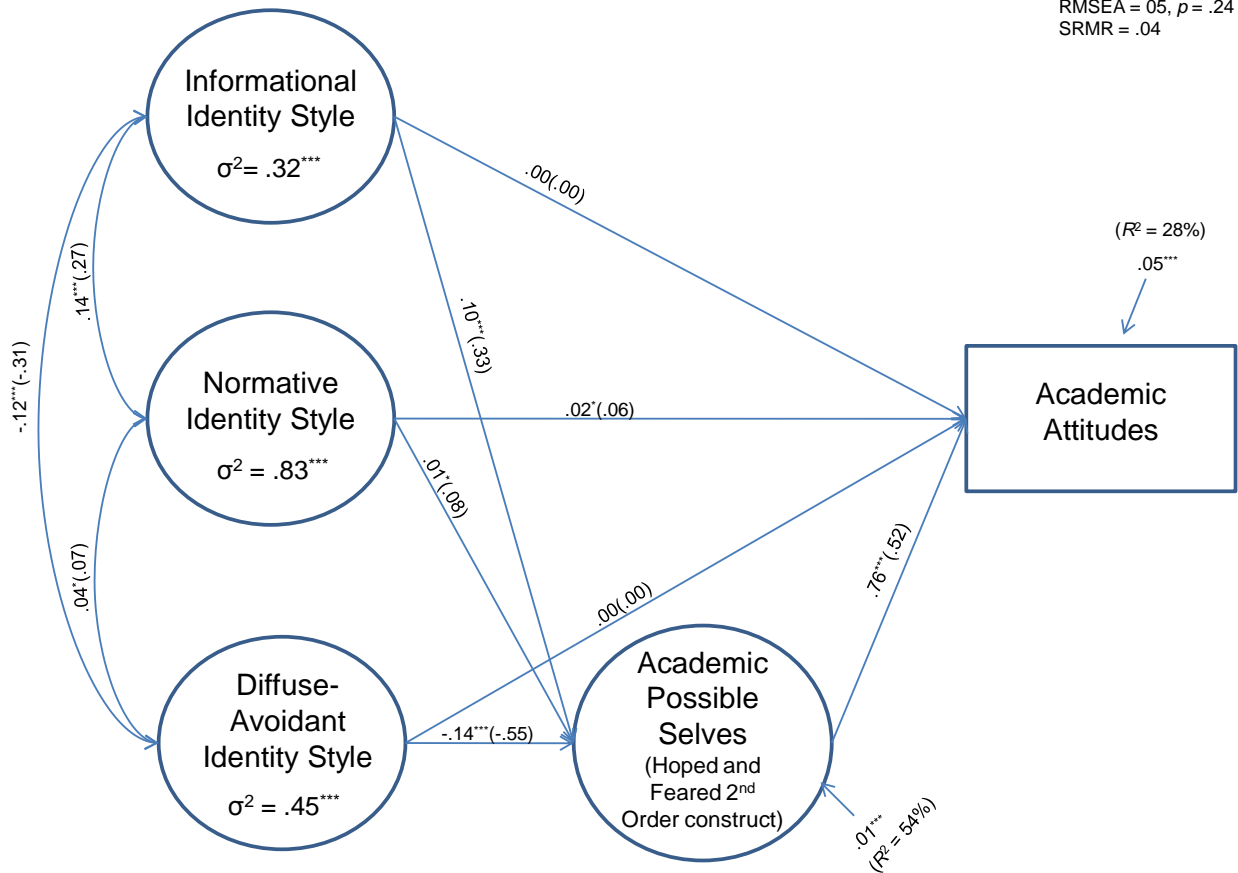*Figure 10.* Fitted Path Diagram: Academic possible selves mediating the relationship of academic attitudes regressed on identity styles. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1,137$).

Table 18. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for academic possible selves mediating the relationship of academic attitudes regressed on identity styles (N = 1,137).*

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Academic possible selves on | | | |
| Informational | 0.104 | 0.015 | 0.333[***] |
| Normative | 0.015 | 0.008 | 0.078[*] |
| Diffuse-Avoidant | -0.144 | 0.014 | -0.549[***] |
| | | | |
| Academic Attitudes on | | | |
| Academic possible selves | 0.756 | 0.060 | 0.519[***] |
| Informational | 0.000 | 0.000 | 0.000 |
| Normative | 0.018 | 0.009 | 0.065[*] |
| Diffuse-Avoidant | 0.000 | 0.000 | 0.000 |
| | | | |
| Variances | | | |
| Informational | 0.320 | 0.030 | 1.000[***] |
| Normative | 0.832 | 0.175 | 1.000[***] |
| Diffuse-Avoidant | 0.448 | 0.045 | 1.000[***] |
| | | | |
| R-Squares | | | |
| Academic Attitudes | 0.283 | | |
| APS | 0.541 | | |
| | | | |
| Fit Statistics | | | |
| $\chi^2$ | 185.39[***] | | |
| df | 45 | | |
| CFI | 0.95 | | |
| TLI | 0.92 | | |
| RMSEA | 0.05 | | |
| SRMR | 0.04 | | |

*Note.* [*] $p < .05$, [***] $p < .001$.

Table 19. *Comparing model fit when all paths are constrained versus unconstrained to be equal for boys and girls with grades as the outcome variable (N = 1,137).*

| Parameter unconstrained to be unequal | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi$2 |
|---|---|---|---|---|---|
| Constraints | 317.994 | 105 | | | |
| Path from Academic Possible Selves to Grades | 314.231 | 104 | 3.763 | 1 | 3.84 |
| Path from Informational Identity Style to Grades | 317.565 | 104 | 0.429 | 1 | 3.84 |
| Path from Normative Identity Style to Grades | 317.983 | 104 | 0.011 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Grades | 317.247 | 104 | 0.747 | 1 | 3.84 |
| Path from Informational Identity Style to Academic Possible Selves | 317.121 | 104 | 0.873 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Possible Selves | 317.074 | 104 | 0.92 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Academic Possible Selves | 317.997 | 104 | 0.017 | 1 | 3.84 |

Table 20. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for boys and girls with grades as the outcome variable* ($N = 1{,}137$).

| | Boys | | | Girls | | |
|---|---|---|---|---|---|---|
| | Unstandardized Estimates | S.E | Standardized Estimates | Unstandardized Estimates | S.E | Standardized Estimates |
| **Academic possible selves on** | | | | | | |
| Info | 0.092 | 0.014 | 0.338*** | 0.092 | 0.014 | 0.339*** |
| Norm | 0.009 | 0.006 | 0.059 | 0.009 | 0.006 | 0.056 |
| Diff | -0.129 | 0.014 | -0.527*** | -0.129 | 0.014 | -0.541*** |
| **Grades on** | | | | | | |
| APS | 10.311 | 1.239 | 1.050*** | 10.311 | 1.239 | 1.126*** |
| Info | -0.608 | 0.163 | -0.226*** | -0.608 | 0.163 | -0.244*** |
| Norm | 0.006 | 0.051 | 0.004 | 0.006 | 0.051 | 0.004 |
| Diff | 0.721 | 0.197 | 0.300*** | 0.721 | 0.197 | 0.331*** |
| **Means** | | | | | | |
| **Info** | **0.000** | **0.000** | **0.000** | **0.154** | **0.041** | **0.275***** |
| Norm | 0.000 | 0.000 | 0.000 | -0.053 | 0.052 | -0.058 |
| **Diff** | **0.000** | **0.000** | **0.000** | **-0.230** | **0.051** | **-0.358***** |
| **Variances** | | | | | | |
| Info | 0.325 | 0.036 | 1.000*** | 0.314 | 0.035 | 1.000*** |
| Norm | 0.981 | 0.264 | 1.000*** | 0.847 | 0.224 | 1.000*** |
| Diff | 0.408 | 0.056 | 1.000*** | 0.412 | 0.047 | 1.000*** |
| **R-Squares** | | | | | | |
| Grades | 0.669 | | | 0.707 | | |
| APS | 0.486 | | | 0.545 | | |
| **Fit Statistics** | | | | | | |
| $\chi^2$ | 317.99*** | | | | | |
| df | 105 | | | | | |
| CFI | 0.92 | | | | | |
| TLI | 0.91 | | | | | |
| RMSEA | 0.06 | | | | | |
| C.I | 0.05 | | | | | |
| SRMR | 0.06 | | | | | |

*Note*. Differences are in bold font; ***$p < .001$

Table 21. *Comparing model fit when all paths are constrained versus unconstrained to be equal for European-Americans and African-Americans with grades as the outcome variable* ($N = 1,137$).

| Parameter unconstrained to be unequal | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| Constraints | 351.230 | 105 | | | |
| Path from Academic Possible Selves to Grades | 351.051 | 104 | 0.179 | 1 | 3.84 |
| Path from Informational Identity Style to Grades | 349.939 | 104 | 1.291 | 1 | 3.84 |
| Path from Normative Identity Style to Grades | 351.065 | 104 | 0.165 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Grades | 350.987 | 104 | 0.243 | 1 | 3.84 |
| Path from Informational Identity Style to Academic Possible Selves | 351.071 | 104 | 0.159 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Possible Selves | 343.512 | 104 | 7.718 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Academic Possible Selves | 342.795 | 103 | 0.717 | 1 | 3.84 |

Table 22. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for European-Americans and African-Americans with grades as the outcome variable* ($N = 1,137$).

| | European-Americans | | | African-Americans | | |
|---|---|---|---|---|---|---|
| | Unstandardized Estimates | S.E | Standardized Estimates | Unstandardized Estimates | S.E | Standardized Estimates |
| **Academic possible selves on** | | | | | | |
| Info | 0.098 | 0.016 | 0.271*** | 0.098 | 0.016 | 0.367*** |
| **Norm** | **0.047** | **0.014** | **0.185***** | **-0.003** | **0.016** | **-0.013** |
| Diff | -0.136 | 0.015 | -0.459*** | -0.136 | 0.015 | -0.595*** |
| **Grades on** | | | | | | |
| APS | 7.577 | 0.665 | 1.020*** | 7.577 | 0.665 | 0.840*** |
| Info | -0.390 | 0.116 | -0.146*** | -0.390 | 0.116 | -0.163*** |
| Norm | -0.015 | 0.074 | -0.008 | -0.015 | 0.074 | -0.007 |
| Diff | 0.411 | 0.135 | 0.187** | 0.411 | 0.135 | 0.199*** |
| **Means** | | | | | | |
| Info | 0.000 | 0.000 | 0.000 | -0.053 | 0.041 | 0.092 |
| **Norm** | **0.000** | **0.000** | **0.000** | **0.296** | **0.050** | **0.452***** |
| Diff | 0.000 | 0.000 | 0.000 | -0.043 | 0.055 | -0.065 |
| **Variances** | | | | | | |
| Info | 0.309 | 0.035 | 1.000*** | 0.333 | 0.036 | 1.000*** |
| Norm | 0.616 | 0.098 | 1.000*** | 0.428 | 0.066 | 1.000*** |
| Diff | 0.455 | 0.057 | 1.000*** | 0.448 | 0.054 | 1.000*** |
| **R-Squares** | | | | | | |
| Grades | 0.740 | | | 0.436 | | |
| APS | 0.468 | | | 0.560 | | |
| **Fit Statistics** | | | | | | |
| $\chi^2$ | 343.51*** | | | | | |
| df | 104 | | | | | |
| CFI | 0.92 | | | | | |
| TLI | 0.90 | | | | | |
| RMSEA | 0.06 | | | | | |
| C.I | 0.06 | | | | | |
| SRMR | 0.05 | | | | | |

*Note*. Differences are in bold font; **p < .01, ***p < .001

Table 23. *Comparing model fit when all paths are constrained versus unconstrained to be equal for boys and girls with academic attitudes as the outcome variable (N = 1,137).*

| Parameter unconstrained to be unequal | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| Constraints | 283.992 | 107 | | | |
| Path from Academic Possible Selves to Academic Attitudes | 282.911 | 106 | 1.081 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Attitudes | 281.344 | 106 | 2.648 | 1 | 3.84 |
| Path from Informational Identity Style to Academic Possible Selves | 280.647 | 106 | 3.345 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Possible Selves | 281.789 | 106 | 2.203 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Academic Possible Selves | 283.899 | 106 | 0.093 | 1 | 3.84 |

Table 24. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for boys and girls with academic attitudes as the outcome variable* ($N = 1,137$).

| | Boys | | | Girls | | |
|---|---|---|---|---|---|---|
| | Unstandardized Estimates | S.E | Standardized Estimates | Unstandardized Estimates | S.E | Standardized Estimates |
| **Academic possible selves on** | | | | | | |
| Info | 0.093 | 0.014 | 0.304*** | 0.093 | 0.014 | 0.344*** |
| Norm | 0.014 | 0.007 | 0.080* | 0.014 | 0.007 | 0.083* |
| Diff | -0.136 | 0.014 | -0.505*** | -0.136 | 0.014 | -0.582*** |
| **Academic possible selves on** | | | | | | |
| APS | 0.762 | 0.065 | 0.522*** | 0.762 | 0.065 | 0.471*** |
| Info | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Norm | 0.021 | 0.009 | 0.078** | 0.021 | 0.009 | 0.073* |
| Diff | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Means** | | | | | | |
| **Info** | **0.000** | **0.000** | **0.000** | **0.157** | **0.041** | **0.277*** |
| Norm | 0.000 | 0.000 | 0.000 | -0.055 | 0.052 | -0.062 |
| **Diff** | **0.000** | **0.000** | **0.000** | **-0.244** | **0.051** | **-0.371*** |
| **Variances** | | | | | | |
| Info | 0.333 | 0.037 | 1.000*** | 0.322 | 0.035 | 1.000*** |
| Norm | 0.946 | 0.220 | 1.000*** | 0.775 | 0.177 | 1.000*** |
| Diff | 0.433 | 0.057 | 1.000*** | 0.434 | 0.048 | 1.000*** |
| **R-Squares** | | | | | | |
| AA | 0.290 | | | 0.236 | | |
| APS | 0.436 | | | 0.611 | | |
| **Fit Statistics** | | | | | | |
| $\chi^2$ | 283.99*** | | | | | |
| df | 107 | | | | | |
| CFI | 0.93 | | | | | |
| TLI | 0.92 | | | | | |
| RMSEA | 0.05 | | | | | |
| C.I | 0.05 | | | | | |
| SRMR | 0.05 | | | | | |

*Note*. AA (Academic Attitudes); *$p < .05$, ***$p < .001$

Table 25. *Comparing model fit when all paths are constrained versus unconstrained to be equal for European-Americans and African-Americans with academic attitudes as the outcome variable (N = 1,137).*

| Parameter unconstrained to be unequal | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| Constraints | 325.608 | 107 | | | |
| Path from Academic Possible Selves to Academic Attitudes | 322.415 | 106 | 3.193 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Attitudes | 325.474 | 106 | 0.134 | 1 | 3.84 |
| Path from Informational Identity Style to Academic Possible Selves | 322.117 | 106 | 3.491 | 1 | 3.84 |
| Path from Normative Identity Style to Academic Possible Selves | 321.176 | 106 | 4.432 | 1 | 3.84 |
| Path from Diffuse-Avoidant Identity Style to Academic Possible Selves | 321.167 | 105 | 0.009 | 1 | 3.84 |

Table 26. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for European-Americans and African-Americans with academic attitudes as the outcome variable* ($N = 1{,}137$).

| | European-Americans | | | African-Americans | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Unstandardized Estimates | S.E | Standardized Estimates | Unstandardized Estimates | S.E | Standardized Estimates |
| **Academic possible selves on** | | | | | | |
| Info | 0.103 | 0.016 | 0.302[***] | 0.103 | 0.016 | 0.368[***] |
| **Norm** | **0.041** | **0.012** | **0.177[***]** | **-0.001** | **0.017** | **-0.005** |
| Diff | -0.137 | 0.015 | -0.491[***] | -0.137 | 0.015 | -0.571[***] |
| **Academic Attitudes on** | | | | | | |
| APS | 0.734 | 0.057 | 0.552[***] | 0.734 | 0.057 | 0.476[***] |
| Info | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Norm | 0.017 | 0.011 | 0.057 | 0.017 | 0.011 | 0.047 |
| Diff | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Means** | | | | | | |
| Info | 0.000 | 0.000 | 0.000 | -0.056 | 0.041 | -0.096 |
| **Norm** | **0.000** | **0.000** | **0.000** | **0.290** | **0.052** | **0.428[***]** |
| Diff | 0.000 | 0.000 | 0.000 | -0.054 | 0.056 | -0.079 |
| **Variances** | | | | | | |
| Info | 0.310 | 0.035 | 1.000[***] | 0.343 | 0.036 | 1.000[***] |
| Norm | 0.683 | 0.116 | 1.000[***] | 0.458 | 0.072 | 1.000[***] |
| Diff | 0.466 | 0.057 | 1.000[***] | 0.466 | 0.054 | 1.000[***] |
| **R-Squares** | | | | | | |
| AA | 0.324 | | | 0.229 | | |
| APS | 0.535 | | | 0.536 | | |
| **Fit Statistics** | | | | | | |
| $\chi^2$ | 321.18[***] | | | | | |
| df | 106 | | | | | |
| CFI | 0.92 | | | | | |
| TLI | 0.90 | | | | | |
| RMSEA | 0.06 | | | | | |
| C.I | 0.05 | | | | | |
| SRMR | 0.05 | | | | | |

[***] $p < .001$

V. DISCUSSION

The purpose of the present study was to examine the role of identity styles and academic possible selves in academic outcomes for high school students. Understanding the linkages between these constructs is important because academic outcomes may contribute to future success and future financial opportunities (Levin et al., 2007). Understanding the relations among these constructs may also aid developmentalists and researchers to address and comprehend the phenomenon of high rates of high-school drop-out occurring in the United States (Alliance for Excellent Education, 2009; Grey, 2008). Furthermore, although the relations of these mental processes and academic outcomes are well documented (Berzonsky & Kuk, 2005; Boyd et al., 2003; Hejazi et al., 2009; Leondari et al., 1998; Oyserman, 2008; Oyserman et al., 2004; 2006), studies have mostly investigated these relationships on late adolescent samples (see Hejazi et al., 2009 for an exception). Realizing how these mental processes work with high-school students is desirable because the process of engaging in identity exploration and forming possible selves begins in adolescence (Erikson, 1959; 1968; Markus & Nurius, 1986; Nurmi, 2005). Moreover, adolescents' high-school experience may provide many opportunities for them to engage in these processes. In addition to investigating the relations among these constructs, the present study also examined how these constructs operate together. Past studies have examined identity styles and academic possible selves and their relationship with academic outcomes as separate entities. As argued by others (Dunkel, 2000; Dunkel and Anthis, 2001), the construction of possible selves can be taken as an expression of identity exploration. Here it is

also argued that identity styles conceptually precede and shape the formation of possible selves. Therefore, it is possible that both identity styles and academic possible selves may work together in influencing academic outcomes. Furthermore, two sets of mediation hypothesis examined potential mechanisms of influence. First, it was examined whether strategies (i.e., behaviors individuals engage in to reach desired goals; Oyserman, 2008) influence the relationship of academic possible selves and academic outcomes. Past research suggests that holding high academic aspirations for desired academic outcomes is insufficient, and that taking on certain behaviors (e.g., studying hard, completing homework assignments, asking questions in class) is necessary to attain desired academic outcomes (Oyserman et al., 2004; 2006). Secondly, academic possible selves were tested as a potential mediator of the relationship of identity styles and academic outcomes. If identity exploration processes are conceptualized as prior to the formation of possible selves, it may be that academic possible selves mediate the relationship of identity styles and academic outcomes. Gender and ethnic differences were also examined.

The first research question addressed the relationship between academic possible selves and academic outcomes. Consistent with past studies (Leondari et al., 1998; Oyserman, 2008; Oyserman et al., 2004; 2006), it was hypothesized that academic possible selves would be related to academic outcomes. Results supported this hypothesis; academic possible selves were positively related to grades and academic attitudes. Students with hoped-for academic possible selves that emphasized the expectations of good-grades, the successful completion of high school, and more advanced educational attainment in the future were more likely to perform well academically in terms of grades and to hold more positive attitudes about the value of education. The opposite was shown for students with feared academic possible selves emphasizing worry about performing poorly in their classes or failing to successfully finish high school. Stronger

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feared possible selves were associated with lower grades and more negative attitudes about academics.

Academic possible selves in the present study were formulated as a single latent construct indicated by positive (hoped-for) and negative (feared) academic possible selves (but feared constructs were reverse coded). Past research has assessed hoped-for and feared possible selves in terms of the number of possible selves' respondents list in response to each prompt (Cross & Markus, 1991; Knox et al., 2000). Using this strategy, Oyserman and Fryberg (2006) argued that possible selves balanced between hoped and feared promotes success since hoped-for selves motivate toward a goal and feared selves motivate away from negative outcomes. The present study did not assess possible selves in terms of lists of future self descriptions, but rather evaluated these constructs with fixed items and Likert-type scales. Hoped-for selves were assessed in terms of feelings of hope, perceived capacity and expectations of desired outcomes, while feared selves were assessed in term of worry, inability and expectations of undesired outcomes. Findings show that, so measured, academic possible selves functioned well as a single latent variable that grew stronger as hoped-for expectancies got stronger and feared expectancies became weaker. This suggests that the balance hypothesis depends heavily on the assessment strategy. The listing strategy refers to distinct and different set of possible selves that one may seek or avoid. As measured here, the possible selves one may hope-for were the mirror opposites of the possible selves one may fear, so the combination of motivators toward hoped for and away from feared academic possible selves should and did yield more optimal academic outcomes. Consistent with previous studies (Leondari et al., 1998; Oyserman, 2008; Oyserman et al., 2004; 2006), current findings support the conclusion that possible selves are important factors in students' academic outcomes.

Literature and theory have demonstrated the importance of strategies in realizing possible selves in desired outcomes (Oyserman, 2008; Oyserman et al., 2004; 2006). To replicate this relation, the present study examined whether a specific strategy, time spent on homework, mediated the relationship between academic possible selves and academic outcomes. Unexpectedly, results did not support this hypothesis. Time spent on homework did not mediate the relationship between academic possible selves and grades, or between academic possible selves and academic attitudes. Although mediating effects were not shown in the present study, it cannot be concluded that strategies, or homework itself are unimportant factors for academic outcomes. Current results showed that academic possible selves were positively related to time spent on homework, suggesting that students who held more positive academic aspirations spent more time in homework.

A plausible explanation as to why time spent on homework did not mediate the relationship between academic possible selves and either form of academic outcomes is because homework can have many meanings when assessed across many contexts. Although the positive association between time spent on homework and grades is well documented in the literature (Cooper, 1989; Cooper et al., 2006; Keith, 1982), it is possible that the amount of time students in the present sample spent in homework varied with the amount of homework teachers assigned. In other words, if some teachers routinely assigned little or no homework, the effects of homework performance on grades or attitudes for this fraction of the sample could be masked. This possibility could suggest that at least for this mediation test, the fact that respondents are nested in school districts across the State of Alabama may have affected this test. A multi-level model recognizing the possible effect of a classroom-level factor representing the amount of homework assigned would be required to directly test this hypothesis.

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Even though time spent on homework did not mediate the relationship between academic possible selves and either form of academic outcomes, it should not be concluded that other strategies would not mediate the relationship between these constructs. A stronger assessment of academic strategy might have been to assess activities more related to student-directed learning such as listening in class, time in self-directed study related to school, or other activities that build academic skills within the context of school. Although the literature suggested that time spent on homework may have been an effective strategy due to its influence on academic performance (Bang et al., 2009; Bowen & Bowen, 1998; Chen & Lu, 2009; Keith, 1982), other forms of academic strategy that might be more self-directed might have better shown the mediating effects expected from the literature.

Importantly, the bivariate relations between time spent on homework and both grades and academic attitudes were significant and positive. However, when academic possible selves, time spent on homework, and academic outcomes (either grades or attitudes) were all included in the model, the associations between homework and academic outcomes either became non-significant (grades) or even negative (academic attitudes). Controlling for academic possible selves, students who spent more time in completing their homework felt more negative about the value of academic success.

The fact that the relationship between time spent on homework and grades became non-significant controlling for academic possible selves suggested the possibility that academic possible selves may mediate the relationship between time spent on homework and grades. Therefore, the model originally presented in Figure 5 and Table 9 was revised so that time spent in homework predicted academic possible selves, which in turn predicted grades. A $\Delta\chi^2$ test was conducted with the path of time spent on homework to grades being set to zero (see Table 27 in

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Appendix C). Results indicated a non-significant $\Delta\chi^2$, indicating that time spent on homework was not related to grades with academic possible selves included in the model, which is consistent with the conclusion that that academic possible selves may mediate the relationship between time spent on homework and grades (see Figure 11 and Table 28 in Appendix D and E). Furthermore, this model was shown to adequately fit the data.

Counter to expectations, this suggests that academic possible selves may influence the relationship between strategies and grades. This interpretation works in conjunction with Bandura's (1989) triadic reciprocal causation theory which states that individuals' behaviors to attain desired goals are influenced by their level of self-efficacy (i.e., the belief of one's ability to perform a certain task) and vice versa. Therefore, these results suggests that time spent in homework enhances believing in one's ability to succeed academically which in turn enhances grades. Although unexpected, these results nevertheless point to the importance of both holding positive academic possible selves and engaging in goal-attainable behaviors for optimal academic outcomes.

The relationship between identity styles and academic outcomes was next examined under the hypotheses that both informational and normative identity styles would be positively related to academic outcomes whereas the diffuse-avoidant identity style would be negatively related to academic outcomes. This was expected on the theoretical grounds that an orientation to actively explore one's identity promotes academic outcomes, while avoiding identity exploration is detrimental. The normative style makes one open to the influence of others, who may promote academic outcomes. Expectations were also based on past findings (Berzonsky & Kuk, 2005; Boyd et al., 2003; Hejazi et al., 2009). Research has found that individuals who use an informational identity style may perform well academically because they are more likely to seek

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out information and to engage in problem-solving strategies when in doubt (Berzonsky, 1990, 1992; Pittman et al., 2009; Schwartz, 2001). Individuals who use a normative identity style may engage in positive academic performance to meet significant others' expectations (Berzonsky, 1989, 1990; Pittman et al., 2009; Schwartz, 2001), while individuals who use a diffuse-avoidant identity style are more likely to procrastinate or to take on unfocused, disorganized behaviors (Berzonsky, 1990, 1992; Berzonsky & Ferrari, 1996, 2009; Pittman et al., 2009; Schwartz, 2001), factors that can be damaging to academic outcomes. Results indicated that both informational and normative identity styles were positively related to academic outcomes, whereas the diffuse-avoidant identity style was negatively related to them.  These finding suggest that the orientations used to explore identity also advance or undermine academic outcomes.

The present study also examined whether identity styles are related to academic possible selves. It was hypothesized that both informational and normative identity styles would be positively related, but the diffuse avoidant style would be negatively related to academic possible selves. Results supported these expectations for the informational and diffuse-avoidant identity styles, but not the normative identity style. These results suggest that possible selves are expressions of identity exploration, which would in turn suggest that engagement in active identity exploration (consistent with an information orientation) promotes the formation of positive possible selves (high hopes and expectations but low fears), but ineffective identity exploration or lack thereof (consistent with a diffuse-avoidant identity style) may be detrimental to the formation of these positive possible selves. These results assume that identity processing styles precede the formation of possible selves. This conclusion, however, goes beyond the current cross-sectional data and would require analysis in a longitudinal study.

If it can be assumed that adolescents with strongly normative identity styles are externally motivated in their identity processes, the current results also suggest that these external motives do not reliably promote the formation of academic possible selves. It would matter who serves as the significant influence on the normative adolescent in terms of academic motivation. If the important people in normatively oriented adolescents' lives encouraged greater hope for academics and less fear of academic failure, the normative style could lead to stronger academic possible selves. However, if the important individuals in normatively oriented adolescents promoted other ideals, the effect on academic possible selves could be negative. Across all normative adolescents, academic possible selves therefore would not be predictable on the basis of their normative style alone. Consistent with this idea, the relationship of the normative identity style with academic possible selves became significant and positive only when academic attitudes were entered into the model.

Academic possible selves were then tested as a mediator to the relationship between identity styles and academic outcomes. Conceptually, identity styles may directly affect academic outcomes, or alternatively, their effects may be indirect as they pass through current expressions of possible selves to affect academic outcomes. Results indicated that academic possible selves mediated the relationship between certain identity styles and academic attitudes. Specifically, academic possible selves mediated the positive association between the informational identity style and academic attitudes, and mediated the negative relationship between the diffuse-avoidant identity style and academic attitudes. This shows that the relationship between active identity exploration (or lack thereof) and academic attitudes depends on the academic possible selves that individuals hold pertaining to their academic future. In other words, being active in identity exploration (i.e., informational identity style) is related to positive

academic aspirations (i.e., more hope and less fear regarding academic possible selves) which in turn are related to academic attitudes. Whereas being inactive or ineffective in identity exploration (i.e., diffuse-avoidant identity style) is related to negative future academic perceptions (i.e., less hope and more fear regarding academic possible selves), which in turn is unfavorable to academic attitudes. Therefore, academic possible selves are influential to the relationship between certain identity styles and academic attitudes. Findings of the present study also support past theories that possible selves are mechanisms of the identity exploration process (Dunkel, 2000; Dunkel & Anthis, 2001).

Consistent with past findings (Berzonsky, 1992; Boyd et al., 2003; Lannegrand-Willems & Bosma, 2006), girls reported higher levels of an informational identity style relative to boys, whom were shown to be more likely to use a diffuse-avoidant identity style. Also in conjunction with past findings indicating that girls hold higher positive academic possible self-views than boys (Kerpelman et al., 2008; Kerpelman & Mosher, 2004), it was expected that girls would report higher levels of academic related ambitions than boys. Furthermore, if girls report higher levels of an informational identity styles while boys report higher levels of a diffuse-avoidant identity style, and if girls generally outperform boys academically (Leondari et al., 1998; Oyserman et al., 2004), it may be expected that the positive relationship between the informational identity style and academic outcomes and academic possible selves would be stronger for girls, and the negative association between the diffuse-avoidant identity style and academic outcomes and academic possible selves would be stronger for boys. However, none of these predictions were supported. These results indicated that although previously reported gender differences were replicated in the identity style participants reported to use (girls reporting higher informational style and boys higher diffuse-avoidant style), there were no

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gender differences in the strength of the relations between styles and academic possible selves or academic outcomes.

In regards to ethnic differences, past studies have shown that European-Americans adopt more individualistic self-views, whereas African-Americans adopt more collectivistic self-views and that these self-views promote the formation of possible selves differently across these two ethnic groups (Oyserman et al., 1995). With this in mind, and consistent with Boyd et al., (2003) who found that African-Americans were more likely than other ethnic groups to use a normative identity style, it was hypothesized that European-Americans would be more likely to use an informational identity style, while African-Americans would be more likely to use a normative identity style. It was also tested whether the positive association between the normative identity style and academic outcomes would be stronger for African-Americans, while the positive relationship between the informational identity style and academic outcomes would be stronger for European-Americans. Differences across these ethnic groups in the interrelations between identity styles and academic possible selves were also examined under the speculation that the positive association between the informational identity style and academic possible selves would be stronger for European-Americans, and the positive relationship between the normative identity style and academic possible selves would be stronger for African-Americans. Like Boyd et al., (2003), African-Americans in the current sample reported higher levels of a normative identity style than did European-Americans. However, no ethnic differences were shown for the informational identity style. Although African-Americans had higher scores on the normative style, the relation between the normative style and academic possible selves differed from expectations. The normative identity style was not related to academic possible selves for African Americans but it was for European-Americans. These results indicate that although

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African-Americans endorsed higher level of a normative identity style, expectations from significant others on academic outcomes may vary for this ethnic group. African-Americans may have influences urging them to succeed academically or may also encounter influences promoting negative academic values. Normative European-Americans, on the other hand, may receive a more consistent message about the value of education. Results also showed that the relationship between identity styles and academic outcomes do not differ for European-Americans and African-Americans, which indicate that the relationship between these two constructs may work the same for both groups.

**Limitations and Alternative Explanations**

One significant limitation of the present study is the fact that only one form of academic strategy (time spent on homework) was used to assess a much larger idea. According to Oyserman (2008) strategies include a variety of behaviors individuals tend to engage in to achieve their goals (e.g., attending and asking questions in class, taking one's studies seriously, completing homework assignments; Oyserman et al., 2004, 2006). It may be possible that if more forms of academic strategies were assessed in the present study, the predicted mediating effects may have been indicated in the relationship between academic possible selves and academic outcomes. The decision to limit the strategy on only one was made in order to limit the burden of data collection. The one strategy selected seemed to be the most defensible based on the literature. However, hindsight suggests that multiple strategies measuring more individually driven activity linked more uniformly to academic success could have had a better chance of replicating the patterns from the literature.

Furthermore, all constructs were self-reported. This limitation is particularly problematic for constructs that could be assessed objectively, especially grades. Participants reported on a 7-

105

point scale the grades they mostly made in their academic classes. It may be that participants

inflated their reported grades or in other ways inaccurately reported them. A more accurate

reflection of students' academic performance would be based directly on school records.

However, in order to limit the burden on school teachers and to protect the confidentiality of the

students, no school records were collected for this study.

Perhaps the most important limitation to this study is the fact that it is cross-sectional in

design. Therefore, causation cannot be implied and any causal ordering among the constructs is

conceptual and only speculative. The present study conceptualized identity styles to precede

academic possible selves which were conceptualized as more immediate influences on academic

outcomes rather than the reverse order. A possible alternative would reverse the order between

identity styles and academic possible selves. This revised model was fitted for each academic

outcome. First, grades were regressed on all three identity styles and academic possible selves,

and identity styles were regressed on academic possible selves. This model showed no

convergence.

Next academic attitudes were regressed on all three identity styles and academic possible

selves, and identity styles were regressed on academic possible selves. Results indicated the fit of

this model (see Figure 12 and Table 29 in Appendix F and G) was considerably worse than the

model with the originally specified order (compare Figure 10 and Table 18). Specifically, the

chi-square of the reversed order model ($\chi^2 = 250.91$, df = 46, $p < .001$) was higher by 65.52

points compared to the original model ($\chi^2 = 185.39$, df = 45, $p < .001$). Moreover, the TLI was

.92 in the original model, the RMSEA was non-significant, and the SRMR was .04, whereas the

TLI was .89 in the reversed order model, the RMSEA was significant, and the SRMR was .05.

This suggests that although causation cannot be asserted, the substantially eroded model fit seen

with reversed ordering is consistent with the present study's hypothesized ordering of the constructs.

**Contributions**

Contributions of the present study include that it examined the relationship between identity styles and academic outcomes on a sample of high school adolescents. Research examining the relations among these constructs was mostly conducted on samples of college undergraduates (Berzonsky & Kuk, 2005; Boyd et al., 2003; see Hejazi et al., 2009 for an exception). Understanding the relationship between these constructs on high school aged adolescents is valuable because it is during adolescence that the process of identity exploration begins (Erikson, 1959; 1968) which in turn factors into their academic outcomes.

Where research on identity styles and academic outcomes has been conducted on older participants, research on academic possible selves and academic outcomes has been largely conducted on middle-school aged adolescents (Oyserman et al., 2004, 2006). The effects of academic possible selves on academic outcomes have been understudied among high school aged students (see Leondari et al., 1998 for an exception). If high school experiences provide opportunities to begin thinking more realistically about the future in terms of school and career, it is important to understand how academic possible selves predict academic outcomes during these years.

The examination of gender and ethnic differences is another contribution of this study. Research on identity styles were mostly conducted on predominantly European-American female samples (Berzonsky, 1992; Berzonsky & Ferrari, 1996, 2009; Berzonsky & Kuk, 2005; Boyd et al., 2003). Given that we are currently living in a diverse society, it is important to understand cultural and/or ethnic differences in how adolescents approach identity exploration. Moreover,

even though group differences were shown in relations to which identity styles individuals tend to use, no gender differences were shown as to the relations between identity styles and academic outcomes and academic possible selves, and only one path was shown to be different across ethnic groups. These findings are important because they suggest that, in spite of mean differences between groups, there are few differences in the ways the variables relate to one another across groups.

The present study is one of the few that examined the relationship between identity exploration processes and academic possible selves (see Dunkel 2000 and Dunkel & Anthis, 2001 for an exception). Findings from the present study indicated that these two theories work well together. Current results are consistent with these other studies and suggest that the formation of possible selves represents a process of identity exploration, or more specifically that possible selves are actually mechanisms of the identity exploration process. Current findings are also consistent with the present study's argument that identity processing styles either precede the formation of possible selves or co-evolve with them. Understanding how these two theories relate may motivate researchers to think of them as one conjoined process as opposed to two separate ones.

**Future Directions**

This may be the first study that examined academic possible selves as a mediating factor in the relation between identity processing styles and individual outcomes. Findings from the present study indicated that academic possible selves and identity styles may operate together in influencing academic outcomes. However, despite its contributions, future research is necessary to further examine these constructs and their effects on academic outcomes.

For instance, the present study indicated that academic possible selves mediated the relationship between certain identity styles and academic attitudes, but not when identity styles were related to grades. Future studies ought to examine if academic possible selves can mediate the relationship between identity styles and other forms of academic performance (e.g., how students perform in their class exams). Furthermore, past studies have shown identity styles to be related to how students adapt to their school environment, which in turn may aid students' academic performance (Berzonsky & Kuk, 2005). Researchers can investigate whether academic possible selves also mediate the relationship between identity styles and adaptation to school. Another idea may be to investigate how adolescents' feedback relating to their academic performance may influence identity styles and academic possible selves. In other words, if adolescents are given positive feedback regarding their academic performance, how would that affect their approach to identity exploration and how would that in turn influence their possible selves? Adolescents' feedback regarding their academic possible selves and its potential influence to identity styles and academic outcomes also ought to be examined. Also, if possible selves are drivers of identity exploration processes during early and middle adolescence, this variable can also work as a mechanism to identity exploration in later adolescence once greater development in identity exploration is shown (Berzonsky, 1989; 1990). Therefore, future studies need to examine the relationship between identity styles and academia during late adolescence and whether academic possible selves can be a mediator to the relationship of identity styles and academic outcomes among this population.

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MEASURES USED IN STUDY
Demographics

Instructions: Please indicate your answer by filling in the blank with the requested information, or checking or circling the choice that fits your best. This is not a "test", but please be as honest as you can.

Age:   12      13      14      15      16      17      18      19      20      21      22      >22

Date of birth: _____/_____/_____ Month/Day/Year

Sex:   (A) Male              (B) Female

Race/Ethnicity:
        (A) Black/African American
        (B) White/Caucasian
        (C) Hispanic/Latino
        (D) Native American
        (E) Asian American
        (F) Other: _____(please specify)

Education – what grade are you currently attending in school?
        (A) 9th grade (Freshman)
        (B) 10th grade (Sophomore)
        (C) 11th grade (Junior)
        (D) 12th grade (Senior)
        (E) Other: _____ (please specify)

What types of grades do you MOSTLY make in your academic classes? (Circle 1)
        (1) All A's
        (2) Mostly A's and B's
        (3) Mostly B's
        (4) Mostly B's and C's
        (5) Mostly C's
        (6) Mostly C's and D's
        (7) Mostly D's or less

Do you receive a free or reduced lunch?      (A) Yes          (B) No

What is your parent's marital/relationship status? (Circle 1)
        (1) Living together but not married
        (2) Married to each other
        (3) Divorced
        (4) Never married to each other and not living together
        (5) Other _____

        If your parents are divorced, how old were you at the time of their divorce?
        _____ years old (if you were less than one year old, put a check here_____ )

        Has your mother remarried?  (A) Yes        (B) No

        Has your father remarried?    (A) Yes        (B) No

| FOR EACH ROW BELOW, PUT A CHECK IF YOU LIVE WITH THIS TYPE OF PERSON AT LEAST SOME OF THE TIME | |
|---|---|
| Original Mother (Biological or Adoptive) | |
| Original Father (Biological or Adoptive) | |
| Step-Mother | |
| Step-Father | |
| Biological Brothers | |
| Step-Brothers | |
| Half-Brothers | |
| Biological Sisters | |
| Step-Sisters | |
| Half-Sisters | |
| Any Children of Your Own | |
| Aunts and/or Uncles | |
| Grandparents | |
| Other | |

How often do you attend religious services? (please circle your answer)

(1) I do not attend religious services      (4) About twice a month
(2) Less than once a month             (5) Once a week
(3) About once a month                (6) More than once a week

Think about the parents (or parent figures) with whom you live all or most of the time and circle the number that shows the highest diploma he or she has obtained so far:

a. Father/Father-Figure                b. Mother/Mother-Figure
(0) I do not have a father              (0) I do not have a father
(1) no diploma                         (1) no diploma
(2) High school diploma/GED        (2) High school diploma/GED
(3) Junior College/Trade School      (3) Junior College/Trade School
(4) 4-year College                   (4) 4-year College
(5) Advanced Degree beyond College  (5) Advanced Degree beyond College

Does your father (figure) work for pay?

(A) Yes, full time     (B) Yes. Part-time     (C) No     (D) Other     (E) Not Applicable

Does your mother (figure) work for pay?

(A) Yes, full time     (B) Yes. Part-time     (C) No     (D) Other     (E) Not Applicable

## Expected Educational Attainment

How much education do you expect to have by the time your education is complete?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Less than High School | Finish High School | Junior College/ Trade School | College Degree | Advanced Degree Beyond College |

Identity Style Inventory –Version 4 (ISI-4)

Instructions: Please indicate, by circling the number at the right of each item, how much each of the following statements fits with how you see yourself.

|  | 1<br>Not<br>at All<br>Like Me |  |  | 5<br>Very<br>Much<br>Like Me |  |
|---|---|---|---|---|---|
| 1. Talking with others helps me explore with personal beliefs. | 1 | 2 | 3 | 4 | 5 |
| 2. When facing a life decision, I take into account different points of view before making a choice. | 1 | 2 | 3 | 4 | 5 |
| 3. When facing a life decision, I try to analyze the situation in order to understand it. | 1 | 2 | 3 | 4 | 5 |
| 4. When making important life decisions, I like to think about my options. | 1 | 2 | 3 | 4 | 5 |
| 5. I handle problems in my life by actively reflecting on them. | 1 | 2 | 3 | 4 | 5 |
| 6. When making important life decisions, I like to have as much information as possible. | 1 | 2 | 3 | 4 | 5 |
| 7. It is important for me to obtain and evaluate information from a variety of sources before I make important life decisions. | 1 | 2 | 3 | 4 | 5 |
| 8. I automatically adopt and follow the values I was brought up with. | 1 | 2 | 3 | 4 | 5 |
| 9. I strive to achieve the goals that my family and friends hold for me. | 1 | 2 | 3 | 4 | 5 |
| 10. I never question what I want to do with my life because I tend to follow what important people expect me to do. | 1 | 2 | 3 | 4 | 5 |
| 11. I think it is better to adopt firm set of beliefs than to be open-minded. | 1 | 2 | 3 | 4 | 5 |

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12. I think it is better to hold on to fixed values rather than to consider alternative value systems.  1  2  3  4  5

13. I prefer to deal with situations in which I can rely on social norms and standards.  1  2  3  4  5

14. When I make a decision about my future, I automatically follow what close friends or relatives expect from me.  1  2  3  4  5

15. When others say something that challenges my personal values or beliefs, I automatically disregard what they have to say.  1  2  3  4  5

16. I'm not sure where I'm heading in my life: I guess things will work themselves out.  1  2  3  4  5

17. Many times, by not concerning myself with personal problems, they work themselves out.  1  2  3  4  5

18. I am not really thinking about my future right now, it is still a long way off.  1  2  3  4  5

19. When I have to make an important life decision, I try to wait as long as possible in order to see what will happen.  1  2  3  4  5

20. I try not to think about or deal with personal problems as long as I can.  1  2  3  4  5

21. I try to avoid personal situations that require me to think a lot and deal with them on my own.  1  2  3  4  5

22. Sometimes I refuse to believe a problem will happen, and things manage to work themselves out.  1  2  3  4  5

23. Who I am changes from situation to situation.  1  2  3  4  5

24. When personal problems arise, I try to delay acting as long as possible.  1  2  3  4  5

Academic Attitudes

Instructions: Indicate how much you agree with the following statements:

|  | Strongly Disagree | | | Strongly Agree | |
|---|---|---|---|---|---|
| 1. Doing well in school helps you do better in life. | 1 | 2 | 3 | 4 | 5 |
| 2. The things you are taught in school are pretty useless once you graduate from high school. | 1 | 2 | 3 | 4 | 5 |
| 3. Trying hard in school is a waste of time. | 1 | 2 | 3 | 4 | 5 |

Academic Possible Selves:
Finishing High School

Instructions: Please answer the next questions about Finishing High School.

|  | Strongly Disagree | | | Strongly Agree | |
|---|---|---|---|---|---|
| 1. I hope to graduate from high school. | 1 | 2 | 3 | 4 | 5 |
| 2. I feel fully capable of finishing high school and graduating. | 1 | 2 | 3 | 4 | 5 |
| 3. I believe it is likely that I will finish and graduate from high school. | 1 | 2 | 3 | 4 | 5 |
| 4. I some times worry that I will fail or drop out of high school before finishing. | 1 | 2 | 3 | 4 | 5 |
| 5. I am not sure that I can avoid failing or dropping out of high school before finishing. | 1 | 2 | 3 | 4 | 5 |
| 6. I am afraid that failing or dropping out of high school before finishing is pretty likely. | 1 | 2 | 3 | 4 | 5 |

Strategy

How many hours a week do you usually spend doing homework? (Circle One)
      a. 0 hours a week
      b. Less than 1 hour a week
      c. 1-2 hours a week
      d. 3-5 hours a week
      e. 6-10 hours a week
      f. More than 10 hours a week

Academic Possible Selves:
Getting Good Grades

Instructions: Please answer the next question about your Grades.

|  | Strongly Agree | | | | Strongly Disagree |
| --- | --- | --- | --- | --- | --- |
| 1. I hope to make good grades in high school. | 1 | 2 | 3 | 4 | 5 |
| 2. I feel fully capable of making good grades in high school. | 1 | 2 | 3 | 4 | 5 |
| 3. The chances are really good that I will make good grades in high school. | 1 | 2 | 3 | 4 | 5 |
| 4. I some times worry about making bad grades in high school. | 1 | 2 | 3 | 4 | 5 |
| 5. I am not sure whether I can avoid making bad grades in high school. | 1 | 2 | 3 | 4 | 5 |
| 6. I believe the chances are good that I will make bad grades in high school. | 1 | 2 | 3 | 4 | 5 |

*Exploratory factor analyses for identity style packets* ($N = 1,431$).

| | Principal Component Matrix 1 | Principal Component Matrix 2 |
|---|---|---|
| **Informational Identity Style Packet 1** | | |
| Informational Identity Style-Item 1 | .403 | |
| Informational Identity Style-Item 2 | .701 | |
| Informational Identity Style-Item 3 | .780 | |
| Informational Identity Style-Item 4 | .746 | |
| **Informational Identity Style-Packet 2** | | |
| Informational Identity Style-Item 5 | .595 | |
| Informational Identity Style-Item 6 | .728 | |
| Informational Identity Style-Item 7 | .677 | |
| **Normative Identity Style-Packet 1** | | |
| Normative Identity Style-Item 1 | .034 | .656 |

APPENDIX B (continues).

APPENDIX B (continued).

| | Principal Component Matrix 1 | Principal Component Matrix 2 |
|---|---|---|
| Normative Identity Style- Item 2 | .077 | .776 |
| Normative Identity Style- Item 3 | .449 | .532 |
| Normative Identity Style- Item 7 | .476 | .509 |
| **<u>Normative Identity Style- Packet 2</u>** | | |
| Normative Identity Style- Item 4 | .663 | .223 |
| Normative Identity Style- Item 5 | .728 | .214 |
| Normative Identity Style- Item 6 | .609 | .222 |
| Normative Identity Style- Item 8 | .603 | -.185 |
| **<u>Diffuse-Avoidant Identity Style- Packet 1</u>** | | |
| Diffuse-Avoidant Identity Style- Item 1 | .092 | .840 |
| Diffuse-Avoidant Identity Style- Item 2 | .232 | .668 |
| Diffuse-Avoidant Identity Style- Item 3 | .251 | .656 |
| **<u>Diffuse-Avoidant Identity Style- Packet 2</u>** | | |

APPENDIX B (continues).

APPENDIX B (continued).

| | Principal Component Matrix 1 | Principal Component Matrix 2 |
|---|---|---|
| Diffuse-Avoidant Identity Style- Item 4 | .548 | .394 |
| Diffuse-Avoidant Identity Style-Item 5 | .717 | .190 |
| Diffuse-Avoidant Identity Style- Item 6 | .763 | .128 |
| Diffuse-Avoidant Identity Style- Item 7 | .632 | .262 |
| Diffuse-Avoidant Identity Style-Item 8 | .518 | .182 |
| Diffuse-Avoidant Identity Style- Item 9 | .784 | .123 |

*Note*. With the exception of the informational identity style, rotated component matrices are reported.

APPENDIX C

Table 27. *Test of mediation: Comparing model fit when the relation between time spent on homework and grades is unconstrained versus constrained to zero* ($N = 1,137$).

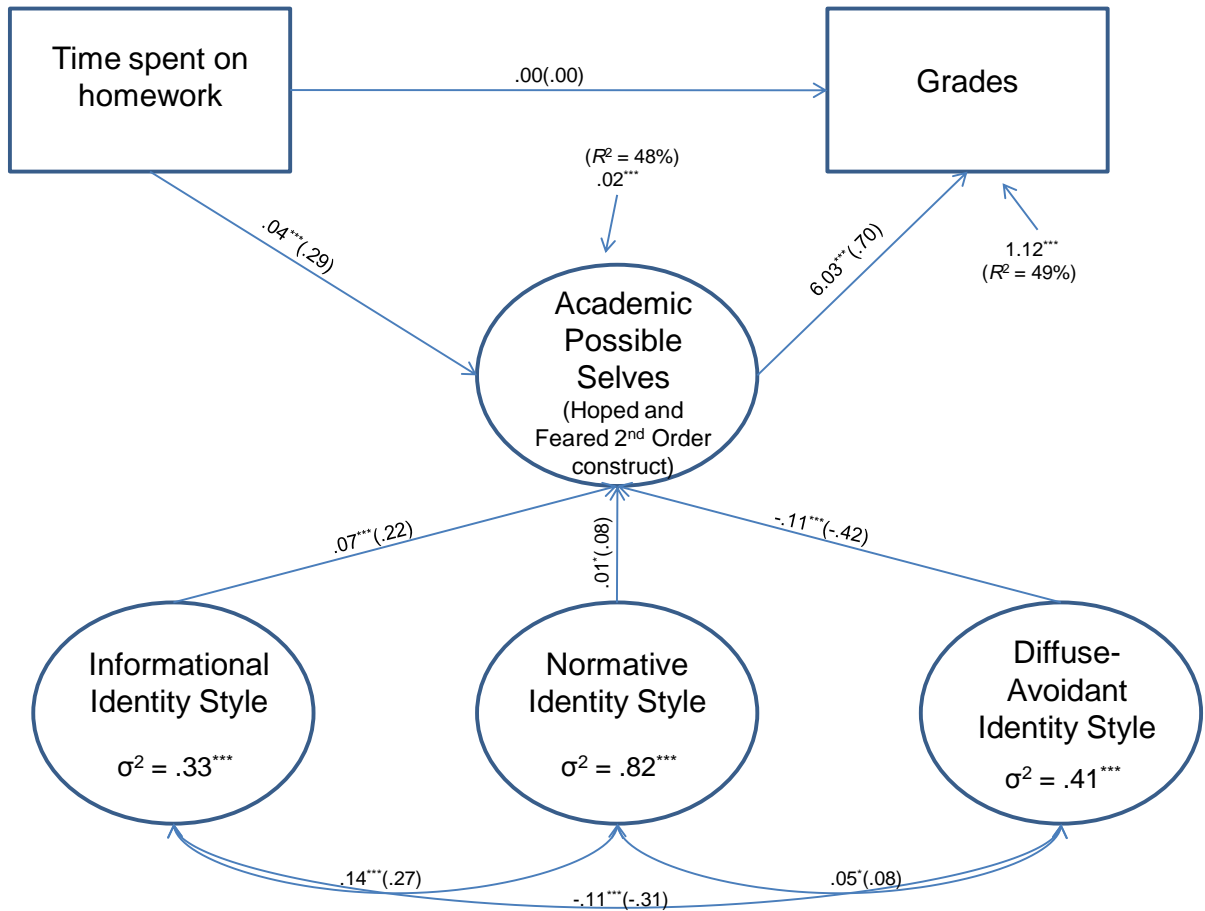| Parameter constrained to zero | $\chi^2$ | df | $\Delta\chi^2$ | $\Delta$df | Crit $\chi^2$ |
|---|---|---|---|---|---|
| No constraints | 276.814 | 53 | | | |
| Path from time spent on homework to Grades | 277.934 | 54 | 1.12 | 1 | 3.84 |

*Figure 11.* Fitted Path Diagram: Academic possible mediating the relationship of grades regressed on time spent on homework. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses ($N = 1,137$).

# APPENDIX E

Table 28. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for academic possible selves mediating the relationship of grades regressed on time spent on homework* $(N = 1,137)$.

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Academic possible selves on | | | |
| Informational | 0.067 | 0.013 | 0.222*** |
| Normative | 0.015 | 0.007 | 0.077* |
| Diffuse-Avoidant | -0.113 | 0.013 | -0.419*** |
| | | | |
| Academic possible selves on | | | |
| Homework | 0.040 | 0.005 | 0.290*** |
| | | | |
| Grades on | | | |
| Academic possible selves | 6.028 | 0.366 | 0.701*** |
| | | | |
| Grades on | | | |
| Homework | 0.000 | 0.000 | 0.000 |
| | | | |
| Variances | | | |
| Informational | 0.327 | 0.031 | 1.000*** |
| Normative | 0.819 | 0.184 | 1.000*** |
| Diffuse-Avoidant | 0.413 | 0.044 | 1.000*** |
| | | | |
| R-Squares | | | |
| Grades | 0.492 | | |
| APS | 0.480 | | |
| | | | |
| Fit Statistics | | | |
| $\chi^2$ | 277.93*** | | |
| CFI | 0.93 | | |
| TLI | 0.90 | | |
| RMSEA | 0.06** | | |
| SRMR | 0.04 | | |

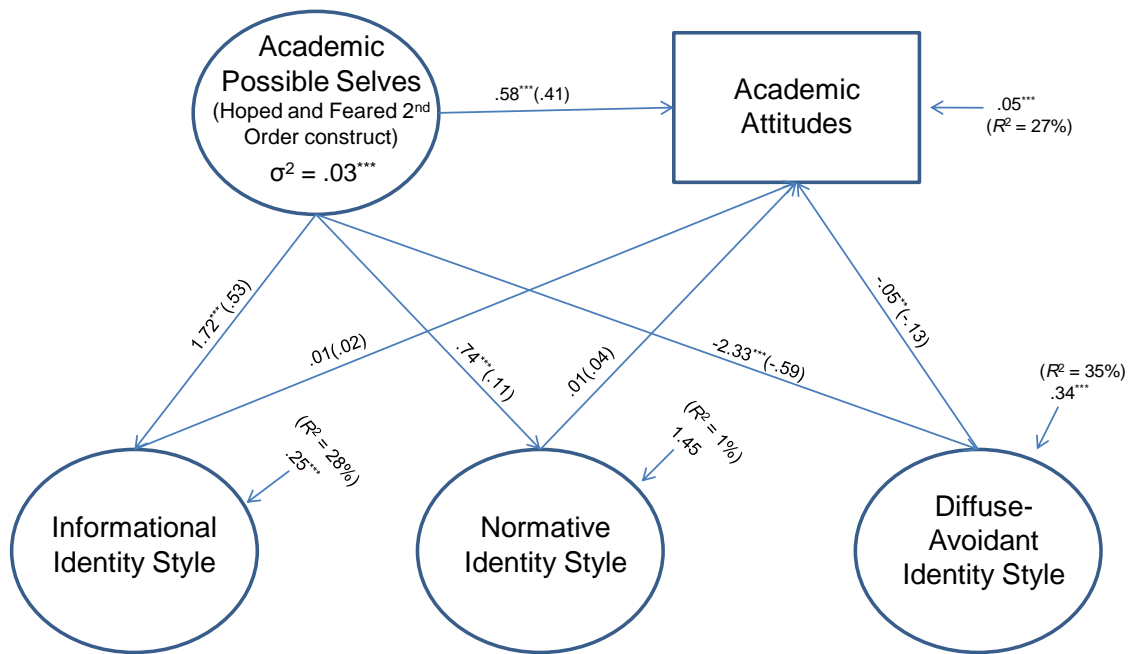*$p < .05$, **$p < .01$, ***$p < .001$.

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*Figure 12*. Fitted Path Diagram: Identity styles mediating the relationship of academic attitudes regressed on academic possible selves. Non-standardized regression coefficients with standardized coefficients and R-Squares in parentheses (*N* = 1,137).

APPENDIX G

Table 29. *Standardized and unstandardized parameter estimates, standard errors, R-Squares and fit statistics for*

*identity styles mediating the relationship of academic attitudes regressed on academic possible selves* $(N = 1,137)$.

| | Unstandardized Estimates | S.E | Standardized Estimates |
|---|---|---|---|
| Informational style on | | | |
|     Academic possible selves | 1.725 | 0.167 | 0.531*** |
| | | | |
| Normative style on | | | |
|     Academic possible selves | 0.742 | 0.165 | 0.112*** |
| | | | |
| Diffuse-Avoidant style on | | | |
|     Academic possible selves | -2.326 | 0.212 | -0.591*** |
| | | | |
| Academic Attitudes on | | | |
|     Informational | 0.008 | 0.019 | 0.018 |
|     Normative | 0.010 | 0.010 | 0.045 |
|     Diffuse-Avoidant | -0.046 | 0.017 | -0.129** |
|     Academic possible selves | 0.580 | 0.092 | 0.413*** |
| | | | |
| Variances | | | |
|     Academic possible selves | 0.033 | 0.004 | 1.000*** |
| | | | |
| R-Squares | | | |
|     Academic Attitudes | 0.267 | | |
|     Informational | 0.282 | | |
|     Normative | 0.013 | | |
|     Diffuse-Avoidant | 0.349 | | |
| | | | |
| Fit Statistics | | | |
|     $\chi^2$ | 250.91*** | | |
|     df | 46 | | |
|     CFI | 0.92 | | |
|     TLI | 0.89 | | |
|     RMSEA | 0.06** | | |
|     SRMR | 0.05 | | |

** $p < .01$, *** $p < .001$.