THE RELATIONSHIP BETWEEN MULTIPLE CONCEPTS OF SELF, SELF-REFLECTION, AND SUBSTANCE USE AMONG AT-RISK ADOLESCENTS

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The Relationship between Multiple Concepts of Self, Self-Reflection, and Substance Use Among At-Risk Adolescents

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ABSTRACT OF THE THESIS

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Previous research has shown that the likelihood to engage in self-reflection increases during adolescence due to changes in cognition that occur during this stage of development. Importantly, however, more research is needed to examine other factors that might predict self-reflection in adolescence, and the role of self-reflection for adolescents who are identified as ‘at-risk’ for negative outcomes, such as substance use and concepts of negative future selves. The purpose of the present study was to examine whether concepts of self in relationship to others, to culture, and to nature is associated with self-reflection, substance use, and concepts of future selves among at-risk adolescents. This is the first study to examine the relationship between factors in these different domains as well as the relative strength of associations between these factors and other outcome variables. In addition, a growing body of research provides evidence for an influence of nature on psychological well-being, but very little research has examined the role of nature in adolescents’ concepts of self. In the present study, the sample consisted of 38 Latino adolescents (15- to 20-years of age) who were identified as being at-risk for dropping out of high school. Data collection consisted of surveys that included: the Self-Reflection and Insight Scale for Youth (SRIS-Y), the Inclusion of Other in Self scale (IOS), the Inclusion of Nature in Self scale (INS), the Measure of Perceived Social Support (MPSS), a scale measuring current and predicted substance use, as well as novel items measuring Inclusion of Culture in the Self, cultural pride, beliefs about spending time in nature in the future, and beliefs about practicing culture in the future. Correlation and multiple regression analyses were conducted to assess the relationships between factors. The results showed that self-reflection was not significantly related to concepts of self in relation to others, culture, or nature, nor was self-reflection related to substance use, or concepts of future selves. However, concepts of self in relation to nature, culture, and others all had significant positive correlations between one another, as well as significant positive correlations with positive future selves and negative correlations with negative future selves. There were also positive correlations between concepts of self in relation to culture and substance use, as well as positive correlations between concepts of positive future selves and substance use. These results suggest that multiple domains may play a role in the development of concepts of possible future selves among adolescents who are identified as being at risk for negative outcomes, such as dropping out of high school, and that at-risk adolescents may be developing positive associations with substance use. Multiple regression analyses showed that a belief about spending time in nature was particularly important for at-risk adolescents’ concepts of future selves, underscoring the need for more research examining the implications of connectedness to nature in adolescent development. Future research should examine the effectiveness of interventions that emphasize multiple domains of self-concept on positive outcomes for at-risk minority adolescents.
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CHAPTER 1

INTRODUCTION

There are several separate yet highly related components of the self that have been studied in psychological research, including self-concept and self-reflection. The self-concept generally refers to “persons’ views of themselves, usually including concrete characteristics, as well as roles, relationships, and personality characteristics” (Arnett, 2010, p. 150). The concept of the self has been measured in many ways in psychological research (Sale & Brazil, 2004). For example, the self-concept has been investigated as a single, unitary entity with emphasis placed on the sense of self as a whole (Campbell, Trapnell, Heine, Katz, Lavallee, & Lehman, 1996; Cooper & Fazio, 1984; Dweck, 1999; Swann, Chang-Schneider, & McClarty, 2007; Tice, 1993) as multiple entities or multiple selves (Higgins, 1987; Markus & Nurius, 1986; Roberts & Donahue, 1994), and as domain-specific entities, such as concepts of self in social contexts (Dijksterhuis & van Knippenberg, 1998; Förster, Liberman, & Kuschel, 2008; Kawakami et al., 2012; Schubert & Hafner, 2003; Stapel & Blanton, 2004). The process of self-reflection entails considering and reviewing one’s thoughts about one’s self as a whole entity as well as particular dimensions of self (Sherman & Cohen, 2006; Steele, 1988). There is previous research showing the psychological benefits of self-reflection (Damon, 2000; Fonagy & Target, 1998; Sherman & Cohen, 2006; Staudinger, 2001; Wilson & Ross, 2001). However, Barkai and Rappaport (2011) have argued that there is a lack of research examining factors that predict self-reflection, and very little research has examined the relationship between domain-specific concepts of self and self-reflection. The goal of the present research is to examine concepts of self across multiple domains and to investigate the relationship between self-concepts, self-reflection, and other psychological outcomes in adolescence. In particular, the present research examines the relationship between self-concept and self-reflection among adolescents who have been identified as being at risk for negative outcomes, including heavy substance use and negative concepts of self.
CONCEPTS OF SELF AND SELF-REFLECTION

Abstract self-reflection and abstract concepts of self develop substantially in adolescence (Bell, Wieling, & Watson, 2004) because of marked cognitive and neurological development that is taking place during this stage of development (Arnett, 2010; Casey, Getz, & Galvan, 2008; Giedd, 2008; Keating, 2004; Piaget, 1972). The present research will examine abstract concepts of self in relation to others, to culture, and to nature.

Concepts of Self in Relation to Others

Assessment of concepts of self in relation to others (i.e., in the social domain) has included measures of perceived self-other interconnectedness, as well as measures of perceived social support. Assessment of interconnectedness to others has been largely influenced by the Inclusion of Other in the Self (IOS) scale, which consists of seven overlapping circles representing varying degrees of self-other interconnectedness (Aron & Aron, 1986; Aron, Aron, & Norman, 2001; Aron, Aron, & Smollan, 1992; Aron, Meshek, & Aron, 2004; Mashek, Cannaday, & Tangney, 2007; Weidler & Clark, 2011). The IOS scale has been validated in its measurement of perceived closeness to others compared to other measures (Aron et al., 1992; Berscheid, Snyder, & Omoto, 1989; Lippert & Prager, 2001; Morry, 2005; Oswald & Clark, 2003; Sprecher & Hendrick, 2004).

The relationship between a person’s self-concept and perceived social support stem from early social interaction literature that conceptualize the self as being heavily dependent on others in establishing self-appraisals (Whitesell, Mitchell, Kaufman, & Spicer, 2006). Perceived social support has been defined as the perceived availability and reception of social resources from both formal and informal support networks (Cohen, Gottlieb, & Underwood, 2000) Adolescents’ perceived social support has been linked to multiple aspects of psychological well-being (for a review, see Turner & Marino, 1994), including levels of loneliness (Parker & Asher, 1993), depression (Hecht, Inderbitzen, & Bukowski, 1998), aggression (Newcomb, Bukowski, & Pattee, 1993) and general self-concept (Boivin & Be’gin, 1989).

Concepts of Self in Relation to Culture

Previous research suggests that there may be considerable overlap between concepts of self in relation to others and to culture. Social identity can be conceptualized as a facet of
one’s identity that focuses on group memberships and the perceived value of these affiliations (Tajfel & Turner, 1986; Tanti, Stukas, Halloran, & Foddy, 2011;). Social identities are activated through self-categorization and evaluation of similarities and differences between the self and others. Cultural identity, more specifically, can be defined as affiliation with a cultural group, and this affiliation typically develops through interactions with primary socialization sources such as the family, schools, and peers (Oetting, Donnerneyer, & Trimble, 1998; Usborne & Taylor, 2010). In fact, there is some evidence to suggest that cultural identity is stronger for adolescents with greater social support (Gaudet & Clement, 2005). However, concepts of self in relation to culture may be broader than cultural identity. Culture consists of explicit and implicit patterns of historically rooted ideas and their role in institutions, practices and artifacts and is both the product and cause of actions that are dynamic and manifest in everyday social interactions both between and within groups (Markus & Kitayama, 1991). For this reason, connectedness to culture has been measured in a variety of ways, including assessment of cultural pride and degree of engagement with cultural practices (rather than cultural groups).

**Concepts of Self in Relation to Nature**

Previous research shows that people vary in perceived self-nature interconnectedness, and that perceived self-nature interconnectedness is associated with several aspects of psychological well-being, including improved mood and reduced stress (Howell, Dopko, Passmore, & Buro, 2011; Kjellgren & Buhrkall, 2010; Mayer & Frantz, 2004; Nisbet, Zelenski, & Murphy, 2011; Schultz, 2002). Interestingly, however, in spite of research showing psychological benefits associated with perceived self-nature interconnectedness, very little research has examined the role of self-nature interconnectedness in adolescent development. Recent research suggests that intuitively, we often underestimate the benefit of nature exposure (Nisbet & Zelenski, 2011), which may explain why this factor is often overlooked in research examining developmental processes. More research is needed to examine the relationship between concepts of self in relation to others, culture, and nature. For instance, Schultz (2000) has suggested that nature identity is entwined with aspects of social identity and perceived interconnectedness with another person or the group.
IMPLICATIONS OF SELF-CONCEPTS AND SELF-REFLECTION FOR OTHER OUTCOMES

Statistics show that adolescents are at risk for several negative outcomes, including substance use. For instance, a nationwide study showed that 43% of high school seniors reported drinking alcohol within the past month and 28% reported binge drinking within the past month (Monitoring The Future [MTF], 2008). The negative ramifications for teenage alcohol use are far-reaching and impactful on both physical and psychological health. Regular drinking in adolescence has been linked to depression, social withdrawal, problems in school and in relationships with parents, and delinquent behavior (Brook, Nomura, & Cohen, 1989; Repetto, Zimmerman, & Caldwell, 2004; Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Tubman, Gil, & Wagner, 2004). Other statistics show that risk for heavy substance use varies across ethnic groups. Latino adolescents are at greatest risk of engaging in underage binge drinking (25.1%) compared to other ethnic groups, creating a public health concern for these youth (U.S. Department of Health and Human Services, 2011). Latino adolescents are also at greatest risk for developing the highest rates of lifetime alcohol use and suffering alcohol-induced deaths (Center for Disease Control and Prevention [CDC], 2009). In addition, Latino adolescents are at greatest risk for dropping out of high-school (National Center for Education Statistics [NCES], 2007), which may impact concepts of possible future selves. Several researchers have argued for the importance of examining cultural and social factors related to underage drinking and other risk behavior in minority adolescents (Barrera & Castro, 2006; Barrera, Castro, & Steiker, 2011; Lau, 2006; Beauvais & Oetting, 2002). The present research will focus on a group of Latino adolescents who have already been identified as being at risk for negative outcomes, such as dropping out of high school.

Self-Concepts, Self-Reflection, and Substance Use

Previous research has provided strong evidence for a relationship between adolescent drinking behavior and perceived social support (Bossarte, Simon, & Swahn, 2008; Hamdan-Mansour, Puskar, & Sereika, 2007; Reimuller, Hussing, & Ennett, 2011; Tomcikova, Geckova, Dijk, & Reijneveld, 2011; Urberg, Goldstein, & Toro, 2005; Wills & Vaughan, 1989). For instance, risky patterns of drinking occur when adolescents perceive high levels of social support from their peers and low levels of perceived social support from their family.
The relationship between concepts of self in relation to culture and substance use has produced mixed findings (Bates, Beavais, & Trimble, 1997; Canda & Yellow Bird, 1997, Fleming & Ledogar, 2008; Gazis, Conner, & Ho, 2010; Oetting et al., 1998). While some researchers have obtained evidence for a negative correlation between strength cultural identity and substance use among minority adolescents, other researchers have obtained null results. In fact, Gazis et al. (2010) found that Indigenous participants who reported that they spent more time learning about their culture also showed higher rates of smoking. As mentioned above, in spite of research showing that nature experience is positively related to psychological well-being (e.g., Maller, Townsend, Brown, & St. Leger, 2002), very little research has examined the role of self-nature interconnectedness on adolescent risk behavior. More research is needed to examine associations between concepts of self in relation to others, culture, and nature, and implications for substance use among at-risk adolescents.

Importantly, research also shows that there is a relationship between self-reflection and alcohol use. Haleem and Winters (2011) implemented a unique intervention technique to educate college students about the reality and risks of alcohol consumption by incorporating self-reflection into alcohol use attitudes and behavior. Their results indicated that significantly more students considered binge drinking dangerous after the intervention. Other findings also suggest an important role of self-reflection in substance use interventions (e.g., Stephenson & Zygouris, 2007). However, some research has produced mixed results (Mason, Malott, & Knoper, 2009; Springer, Sale, Hermann, Sambrano, Kasim, & Nistler, 2004). For instance, Mason et al. (2009) found that adolescents who reflected on their self-narratives (an individual’s interpretation of their life story) did not evaluate alcohol and substance use any more negatively prior to the treatment program than after the program. More research is needed to address these inconsistent findings, and to examine implications for potential associations with self-concepts.

**Concepts of Possible Future Selves**

As stated above, Latino adolescents are at greatest risk for dropping out of high school compared to other ethnic groups (NCES, 2007). Adolescents who are already identified as being at risk for dropping out of high school may possess more negative
concepts of future selves. The construct of possible selves was introduced by Markus and Nurius (1986). It has been proposed that there are three components to a person’s concept of possible self: an expected self, an ideal self, and a feared self. These components refer to the expectations, hopes, and fears that are significant to the individual’s schema for what type of person they envision themselves to be in the future (Aloise-Young, Hennigan, & Leong, 2001). Aloise-Young et al. have found that the strength of concepts of positive future selves is negatively correlated with adolescent substance use. Other research has shown that concepts of positive future selves are positively correlated with academic achievement in adolescence (Oyserman, Brickman, & Rhodes, 2007). However, these samples included a diverse representation of the American population. The relationship between concepts of possible future selves and substance use among a sample of low-achieving Latino adolescents who are already at risk for dropping out of high school is unknown.

Previous research also provides evidence for a relationship between possible selves domain-specific concepts of self. For example, self-other interconnectedness is relevant to possible selves since future-self construction is strongly influenced by social and sociocultural factors (Markus & Nurius, 1986). Societal values, personal and familial history, and the people surrounding a person all contribute to the emphasis and value an individual places on each aspect of their possible self orientation and which outcomes align with their view for what are considered expectations, hopes, and fears. If an individual believes that their support network is reliable and enhance their sense of self, that individual may conceptualize their future expectations to maintain this strong support system and fears on the idea that they might lose the connections they have developed. Conversely, a more autonomous individual may form their future goals and behavior by valuing personal accomplishments and achievements while placing less emphasis on maintaining past relationships.

**PRESENT RESEARCH**

The present research will contribute to our understanding of the relationship between multiple domains of self-concept, self-reflection, substance use, and possible selves in adolescence. Concepts of self in relation to others were assessed using measures of perceived self-other connectedness (Aron et al., 1992) and perceived social support (Turner & Marino,
1994). Concepts of self in relation to culture were assessed using measures of perceived self-culture interconnectedness (adapted from Aron et al., 1992), cultural pride, and beliefs about practicing culture in the future. Concepts of self in relation to nature were assessed using measures of perceived self-nature interconnectedness (Schultz, 2001) and beliefs about spending time in the future. Substance use was assessed using measures of current and predicted substance use (Aloise-Young et al., 2001) and concepts of possible future selves were assessed using Markus and Nurius’ (1986) measure. Latino adolescents who are identified as being at-risk for dropping out of high school were recruited from a continuation high school for students who have already dropped out or been expelled at other high schools. The student population at the research site is 97% Latino.

It was predicted that increases in the strength of concepts of self in relation to others, culture, and nature and that self-reflection would be negatively correlated with substance use, positively correlated with concepts of positive future selves, and negatively correlated with concepts of negative future selves. It was also predicted that the strength of concepts of self in relation to others, culture, and nature would be positively correlated with self-reflection, and that self-reflection would serve as a mediator between concepts of self on the one hand and both substance use and concepts of possible future selves on the other. Finally, it was predicted that substance use would be positively correlated with concepts of negative future selves and negatively correlated with concepts of positive future selves.
CHAPTER 2

METHOD

PARTICIPANTS

The sample consisted of 38 students enrolled at the MAAC Community Charter School (MCCS) in Chula Vista, CA. Participant ages ranged from 15-20 years old (students are permitted to enroll in MCCS until they are 20 years old) with a mean age of 17.71 years old. The sample was comprised of 18 females and 19 males (47.4% and 50.0% of the sample respectively, with one participant not identifying his or her gender). Students enrolled at MCCS are identified as “at-risk” adolescents, as the school serves students who have not succeeded within typical high school environments. Ninety-seven percent of the school’s student population identifies as Latino (School Accountability Report Card, 2011).

MATERIALS

Self-reflection was assessed using the Self-Reflection and Insight Scale for Youth (SRIS-Y) (see Appendix A). The original SRIS, created by Grant, Franklin, and Langford (2002), was intended solely for adult use and measurement of self-reflection and insight as separate constructs with respectable convergent and divergent validity. The SRIS has two subscales, the Self-Reflection (SRIS-SR) and the Insight (SRIS-IN) subscales, which were conceptualized to focus on Cognitive-Behavioral Therapy (CBT) and the impact self-reflection and insight have on a patient’s recovery (Grant et al., 2002). Researchers Sauter, Heyne, Blote, van Widenfelt, and Westenberg (2004) sought to expand the validity of the SRIS to children and adolescents, and thus created the Self-Reflection and Insight Scale for Youth (SRIS-Y). Their pilot data suggests that the SRIS-Y has strong convergent and divergent validity in relation to the SRIS. The Insight subscale had a negative correlation to the index of internalizing problems, while the Self-Reflection subscale had a positive correlation with the index of internalizing problems (Sauter et al., 2010). These opposing correlational trends imply that the Insight subscale measures “psychologically adaptive self-awareness” and the Self-Reflection subscale measures a “ruminative self-focus” (p. 314).
Despite the initial purpose of the SRIS and the SRIS-Y being catered towards CBT populations, the scale can be applied to non-clinical populations as well (Sauter et al., 2010). Two separate composite scores were created based on the 11 items used from the Self-Reflection subscale and the six items used from the Insight subscale. The Self-Reflection subscale had a good Cronbach’s $\alpha = .80$, while the Insight subscale has a questionable level of internal consistency as it had a Cronbach’s $\alpha = .66$.

**RELATIONSHIP TO OTHERS**

Relationships to others was measured through concepts of self and perceived social support.

**Concepts of Self**

Concepts of self in relation to others was measured with Aron et al.’s (1992) Inclusion of Other in the Self (IOS) scale (see Appendix B). The IOS scale typically consists of seven Venn diagrams, each consisting of two circles. One circle represents ‘others’ and the second circle represents the ‘self.’ The circles vary in degree of overlap with one another and the students circle whichever amount of overlap between the circles best represents the amount they perceive themselves overlapping with other people. The item was modified to include nine overlap options, including one additional option where the circles did not overlap at all, which represented 100% separation between self and others, and one additional option where the circles were superimposed, which represented 100% overlap between self and others (previous versions of this scale did not include such options).

Another measure used to evaluate concepts of self in relation to others was the “Identification Task” (see Appendix C), which asked students to circle any items that make them who they are. The terms used in the measure consists of social items (e.g. family, government, friends, etc.), nature items (e.g. rivers, birds, trees, etc.), and artifacts (cell phones, cars, etc.). To measure importance of others in relation to concepts of self, the total number of social groups circled was calculated into a composite score. The social items questionable inter-correlation with a Cronbach’s $\alpha = .63$. 
Perceived Social Support

To assess social support, questions were based on Turner and Marino’s (1994) Measures of Perceived Social Support (MPSS) scale (see Appendix D). The MPSS scale includes four subsections addressing social support from spouses, friends, relatives and co-workers. The adapted scale in the present study was modified for a high school context and included only two subsections assessing ‘other students’ and ‘staff/teachers,’ using the terminology from the eight item friends support subscale. The modified scale had five items for ‘other students’ and five items for ‘staff/teachers’ relatedness and importance to the participant’s social support. Such items included were “My teachers/staff often let me know that they think I’m a worthwhile person” and “I feel that other students really care about me.” Two separate composite scores were created to measure perceived social support: one for the teacher and staff focused items and one for the student focused items. The perceived social support from students scale and perceived social support from teachers both had good internal consistency with Cronbach’s $\alpha = .81$.

Relationship to Culture

Relationship to culture was measured through concepts of self, cultural pride, and beliefs about practicing culture.

Concepts of Self

Concepts of self in relation to culture was measured through the “Inclusion of Culture in the Self (ICS) scale (see Appendix E), which is a new measure adapted from the IOS scale that substituted the word “others” with “culture”.

Cultural Pride

Cultural pride was evaluated using a single-item scale in which participants listed the cultural group(s) they belong to and then rated the extent to which they are proud to be a member of that culture, using a Likert scale ranging from 1 to 10, with ‘1’ being ‘Not Very Proud’ and ‘10’ being ‘Very Proud’ (see Phinney, Cantu, & Kurtz, 1997 for examples of single item scales measuring cultural/ethnic identity and salience) (also see Appendix F).
Beliefs about Practicing Culture
A single item was added to Markus and Nurius’ (1986) Selected Self Items (see Concepts of Possible Future Selves) to assess participants’ beliefs about the likelihood that they will practice culture in the future. Participants responded using a Likert scale ranging from 1 to 10 with ‘1’ being ‘Very Unlikely’ and ‘10’ being ‘Very Likely.’

Relationship to Nature
Relationship to nature was measured with concepts of self and beliefs about spending time in nature.

Concepts of Self
To measure concepts of self in relation to nature, the survey included the Inclusion of Nature in the Self (INS) scale, developed and tested by Schultz (2001), which is the same as the IOS scale with the exception of the word ‘others’ being replaced by ‘nature’ (see Appendix G). Another measure that was used to evaluate concepts of self in relation to nature was the previously mentioned “Identification Task”, since the scale has natural items listed and measures how many natural items a participant identifies as making them who they are. To measure concepts of self in relation to nature, the number of nature items circled were calculated into composite scores for the living natural kind items (i.e. birds, mammals) and non-living natural kinds (i.e. rocks, clouds). The living natural kind items had a questionable internal consistency with Cronbach’s $\alpha = .61$, while the non-living natural kind items had acceptable internal consistency with Cronbach’s $\alpha = .77$.

Beliefs about Spending Time in Nature
A single item was added to Markus and Nurius’ (1986) Selected Self Items (see Concepts of Possible Future Selves) to assess participants’ beliefs about the likelihood that they will spend time in nature in the future. Participants responded using a Likert scale ranging from 1 to 10 with ‘1’ being ‘Very Unlikely’ and ‘10’ being ‘Very Likely.’

Concepts of Possible Future Selves
Concepts of possible future selves were measured using Markus and Nurius’ Selected Self Items (1986) that consisted of adjectives or phrases the adolescent could identify with as
being a part of their positive future self-concepts or negative future self-concepts (see Appendix H). All of the items were preceded by the question: “How likely do you think each of the phrases below will describe you in the future?” Positive future self-concept items included responses such as “Happy”, “Confident” and “Have a Job”, while the negative future self-concept items such as “Lazy”, “Depressed”, and “Be Unimportant”. Participants responded using a Likert scale ranging from 1 to 10 with ‘1’ being ‘Very Unlikely’ and ‘10’ being ‘Very Likely.’ Separate composite scores were created for the total number of positive future self-concept items circled as well as the total number of negative future self-concept items circled by students. The concepts of positive future selves scale had good internal consistency with Cronbach’s $\alpha = .90$, while the concepts of negative future selves scale also had good internal consistency with Cronbach’s $\alpha = .88$.

**Past and Predicted Alcohol, Cigarette, and Drug Use**

To measure student substance usage, students were asked to complete a Likert scale item in which they circle the number of times they used drugs, the number of alcoholic drinks consumed, or the number of times they smoked cigarettes in the past 30 days, as well as the number of alcoholic drinks, the number of times they expect to smoke cigarettes, and the number of times they will use drugs in the next 30 days, with responses ranging from ‘zero’ times to ‘more than 25’ (Aloise-Young et al., 2001) (see Appendix I).

**PROCEDURE**

The data were collected during two separate periods of the academic year, the first in September 2012 and the second in February 2013. Data collection took place on site at the MCCS campus during school hours. Participants were gathered by the researcher and school staff and brought into a common area to complete the surveys together during one 35-minute advisory period. Students were also given multiple opportunities to complete the surveys if they were unable to complete them on the first day. Participants were informed that there were no right or wrong answers. The survey was created in English and then translated into Spanish by two colleagues from San Diego State University to accommodate the students of MCCS who are English as a Second Language (ESL) learners. Data was then entered and coded into SPSS statistical software by multiple members of a research lab.
CHAPTER 3

RESULTS

Pearson correlations were conducted to assess the strength of the relationships among the dependent variables, among the independent variables, and between the dependent and independent variables from the surveys. Multiple regression analyses were conducted for cases in which multiple independent variables were related to a dependent variable in order to assess the extent to which each independent variable accounted for a significant proportion of the variance in the dependent variable, above and beyond other independent variables. Independent variables include the concepts of self measures (IOS, INS, and ICS, as well as identification with natural kinds and social kinds in the Identification task), perceived social support, cultural pride, beliefs about spending time in nature in the future, and beliefs about practicing one’s culture in the future. The dependent variables include self-reflection (both the Self-Reflection and Insight subscales of the SRIS-Y), concepts of possible future selves (including concepts of both positive and negative future selves) and substance use (both current and predicted substance use). The results of the correlation analyses showed that there were statistically significant relationships between adolescent concepts of self in relation to all three domains, predicted substance use, and future self-concepts. The results from multiple regression analyses highlighted the importance of beliefs about spending time in nature for concepts of possible future selves more generally.

In what follows, results from the correlation analyses are presented first for correlations among independent variables (see Table 1), and then for correlations among dependent variables (see Table 2), and finally for correlations between independent and dependent variables (see Table 3). The results from multiple regression analyses (see Tables 4 and 5) appear after the results from the correlation analyses.
Table 1. Correlations Among Independent Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>.36$^*$</td>
<td>.46$^{**}$</td>
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<td>.35$^*$</td>
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<td>11. Practice Culture</td>
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<td>.22</td>
<td>.02</td>
<td>.03</td>
<td>-.16</td>
<td>-.29</td>
<td>-.09</td>
<td>.33$^*$</td>
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</tbody>
</table>

Note: $^*$ = p < .05; $^{**}$ = p < .01; $^a$ = p < .10 (approaching significance)

**CORRELATIONS AMONG INDEPENDENT VARIABLES**

There were numerous significant correlations among the measures used to assess concepts of self. The living natural kind items (e.g. birds, mammals) and the non-living natural kind items (e.g. rocks, clouds) of the Identification Task were strongly correlated in a positive direction $r(37) = .80$. Both the living and non-living natural kind items were also positively correlated with the social items of the Identification Task (e.g. friends, family) at statistically significant levels. The non-living natural kind items and social items had a positive correlation of $r(37) = .36$, while the living natural kind items had a positive correlation of $r(37) = .46$. In addition to the significant correlations between items within the Identification Task, there was a significant positive correlation between the IOS (Inclusion of Other in Self) scale and ICS (Inclusion of Culture in Self) scale $r(30) = .50$. The Inclusion of
Table 2. Correlations Among Dependent Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<td>.66**</td>
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<td>-.08</td>
<td>.33a</td>
<td>.56**</td>
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<td>.76**</td>
<td>.43**</td>
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<td>9. Current Cigarette Use</td>
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<td>.80**</td>
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<td>.79**</td>
<td>.50**</td>
<td>.54**</td>
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</table>

Note: * = p < .05; ** = p < .01; a = p < .10 (approaching significance)

Nature in Self (INS) scale was not significantly correlated with any of the other self-concept measures (see Table 1).

Perceived social support from students had a significant positive correlation with perceived social support from teachers and staff $r(35) = .58$. Perceived social support from fellow students was also positively correlated with the Inclusion of Other in Self (IOS) Scale at a statistically significant level $r(30) = 44$. Additionally, perceived teacher and staff support was positively correlated with the social items from the Identification Task $r(35) = .35$. The rest of the self-concept variables were not significantly correlated with either
Table 3. Correlations Between Independent and Dependent Variables

<table>
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<td>-.02</td>
<td>.03</td>
<td>-.29&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-.24</td>
<td>-.08</td>
<td>-.40</td>
<td>-.48&lt;sup&gt;**&lt;/sup&gt;</td>
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<td>.21</td>
<td>-.41&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.01</td>
<td>-.20</td>
<td>-.05</td>
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<td>-.18</td>
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<td>.01</td>
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<td>.01</td>
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<td>.18</td>
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<td>.13</td>
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<tr>
<td>Social Kinds</td>
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<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.06</td>
<td>-.26</td>
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<td>.01</td>
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<td>.17</td>
<td>.11</td>
<td>.33&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>-.03</td>
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<td>-.11</td>
<td>-.36&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.02</td>
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<td>-.02</td>
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<td>-.24</td>
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<td>-.01</td>
<td>-.01</td>
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<td>.04</td>
<td>-.12</td>
<td>-.29</td>
<td>-.12</td>
<td>-.26</td>
<td>-.15</td>
<td>-.33&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Time in Nature</td>
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<td>.16</td>
<td>.60&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.49&lt;sup&gt;**&lt;/sup&gt;</td>
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<td>.01</td>
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<td>.24</td>
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<td>.27</td>
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<tr>
<td>Practice Culture</td>
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<td>.15</td>
<td>.52&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.39&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.23</td>
<td>.26</td>
<td>.34&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.01</td>
<td>.31&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.18</td>
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Note: * = p < .05; ** = p < .01; a = p < .10 (approaching significance).
Table 4. Multiple Regression Analysis with Positive Future Selves as Dependent Variable

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Std. Error</th>
<th>( \beta )</th>
<th>t</th>
<th>Zero-order</th>
<th>Partial</th>
<th>Part</th>
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</thead>
<tbody>
<tr>
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<td>3.16</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>Teacher Support</td>
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<td>0.15</td>
<td>-0.02</td>
<td>-1.18</td>
<td>0.19</td>
<td>-0.03</td>
<td>-0.02</td>
</tr>
<tr>
<td>Time in Nature</td>
<td>0.37**</td>
<td>0.09</td>
<td>0.56**</td>
<td>3.96</td>
<td>0.67</td>
<td>0.59</td>
<td>0.49</td>
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<tr>
<td>Practice Culture</td>
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<td>0.08</td>
<td>0.33**</td>
<td>2.46</td>
<td>0.52</td>
<td>0.41</td>
<td>0.30</td>
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</table>

Note: \( N = 33 \). ** = \( p < 0.01 \)

Table 5. Multiple Regression Analysis with Negative Future Selves as Dependent Variable

<table>
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<tr>
<th>Variable</th>
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<th>( \beta )</th>
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<th>Zero-order</th>
<th>Partial</th>
<th>Part</th>
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<td>-1.64</td>
<td>-0.39</td>
<td>-0.29</td>
<td>-0.23</td>
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</table>

Note: \( N = 33 \). * = \( p < 0.05 \)

perceived social support scale, though perceived student support and the ICS measure had a positive correlation that approached significance \( r(31) = .31 \).

Cultural pride had a significant positive correlation with perceived social support from students \( r(34) = .43 \). Cultural pride also had a significant positive relationship with the Inclusion of Culture in Self scale \( r(33) = .37 \). The positive correlation between cultural pride and IOS approached significance \( r(30) = .36 \).

The single-item measures of spending time in nature and practicing culture had a statistically significant positive correlation with one another \( r(37) = .33 \). Spending time in nature also had a significant positive correlation with perceived social support from teachers.
and staff \( r(35) = .35 \). Spending time in nature had a significant positive correlation with the non-living natural kind items of the Identification Task \( r(37) = .35 \). The practice culture item was positively correlated with the ICS measure \( r(32) = .35 \), indicating a relationship between the different cultural self-concept measures. In addition, the living natural kind items had a negative correlation with the practicing culture item \( r(36) = -.29 \) that approached significance, as well as a positive correlation with the time in nature measure \( r(37) = .29 \) that approached significance.

**Correlations Among Dependent Variables**

Both of the future self-concept items were significantly correlated with one another. Consistent with the Selected Self Items created by Markus and Nurius (1986) assessing possible selves, there was a significant negative correlation between positive future self-concept and negative future-self concept measures as a whole \( r(38) = -.68 \).

Some predicted and current substance use measures displayed significant positive correlations with positive future self-concepts. Between substance use measures, all six types of substance use items (alcohol, cigarettes, and illicit drugs, measured for both current and predicted usage) had significant positive correlations with all of the other substance use measures. The only exception being predicted alcohol use and predicted drug use had a positive correlation that approached significance \( r(36) = .33 \) (see Table 2 for specific strengths of relationships and significance levels). Predicted cigarette usage and the positive future selves composite score were positively correlated with one another as well \( r(36) = .38 \). Current cigarette use had a significant positive correlation with positive future self-concepts \( r(36) = .44 \). Current alcohol use also had a positive correlation with positive future self-concepts that approached significance \( r(36) = .29 \). There were no other significant correlations between future selves measures and predicted or current substance use items, though positive future selves and predicted alcohol use did have a positive correlation that approached significance \( r(36) = .29 \).

The only significant correlation between the self-reflection subscales (the Self-Reflection subscale and Insight subscale) was the positive correlation the subscales had between each other \( r(37) = .57 \). Neither of the subscales were significantly correlated with
any of the predicted substance use items, current substance use items, or future self-concept scales.

**Significant Correlations Between Independent and Dependent Variables**

None of the independent variables were significantly correlated with self-reflection, so the possibility for a mediation analysis to test predictions about self-reflection as a mediator was moot (see Table 3). However, there were several other significant correlations between independent and dependent variables. Perceived social support from teachers and staff had a significant negative correlation with negative future self-concept items $r(35) = - .41$. There were also positive correlations between positive future self-concepts and the practicing culture item $r(37) = .52$, as well as spending time in nature item $r(38) = .60$. Similarly, there were significant negative correlations between negative future self-concepts and practicing culture $r(37) = -.39$, as well as between negative future self-concepts and spending time in nature $r(38) = -.49$. Multiple relationships between current substance use and various independent variables had significant correlations as well. Both current alcohol use and current drug use had significant negative correlations with perceived social support from students, $r(35) = -.40$, and $r(35) = -.48$, respectively. Current alcohol use also had a significant negative correlation with the INS measure $r(30) = -.36$. There was also a significant positive correlation between predicted drug use and practicing culture in the future $r(35) = .34$.

There were also numerous correlations between independent variables and dependent variables that approached significance. Cultural pride had a positive correlation with predicted cigarette use that approached significance $r(35) = .33$. Predicted alcohol use had a negative correlation with perceived social support from students $r(35) = -.29$, as well as with the Inclusion of Nature in Self scale $r(30) = -.33$. In addition, predicted alcohol use had a positive correlation with positive future selves $r(36) = .29$. Self-reflection (both the SRIS-Y-SR and SRIS-Y-IN) had positive correlations with the social kind items of the Identification Task that approached significance $r(36) = .32$, and $r(36) = .31$ respectively. Current cigarette use and cultural pride had a positive correlation $r(35) = .33$. Current alcohol use had a positive correlation with the practice culture item that approached significance $r(35) = .31$. 
Finally, current drug use had a negative correlation with the IOS scale that approached significance $r(30) = -0.33$.

**Multiple Regression Analyses**

Two multiple regression analyses were conducted with positive and negative future self-concepts as the dependent variables and perceived social support from teachers, beliefs about spending time in nature in the future, and beliefs about practicing culture in the future as the independent variables. The analysis was run with these three independent variables because they all had significant negative correlations with negative future selves, and it was important to determine whether each variable accounted for an independent proportion of the variance in the dependent variable, above and beyond the other independent variables.

For the analysis examining concepts of positive future selves, the regression model served as an overall good fit for the data $R = 0.74$, with a large effect size of Cohen’s $f = 1.17$. Both spending time in nature $\beta = 0.56$, $t(30) = 3.96$, and practicing one’s culture $\beta = 0.33$, $t(30) = 2.46$, significantly predicted an independent proportion of the variance in positive future self-concept scores. Perceived social support from teachers did not significantly predict an independent proportion of the variance in future self-concept scores (see Table 4).

For the analysis examining concepts of negative future selves, the regression served as an overall good fit for the data $R = 0.65$, with a large effect size of Cohen’s $f = 0.72$. Only spending time in nature significantly predicted an independent proportion of the variance in negative future self-concept scores $\beta = -0.40$, $t(30) = -2.54$. Neither perceived social support from teachers or practicing culture accounted for a significant proportion of the variance in negative future self-concept scores, above and beyond other independent variables (see Table 5).
CHAPTER 4
DISCUSSION

The hypotheses regarding self-reflection were not supported by the data, as self-reflection was not positively correlated with positive future selves, and self-reflection was not negatively related to any of the substance use items or negative future selves. However, there were significant correlations between concepts of self in relation to others and culture, as well as significant correlations between beliefs associated with concepts of others, culture, and nature, substance use, and concepts of positive future selves. Specifically, the results showed that there was a positive correlation between the Inclusion of Other in the Self (IOS) scale and the Inclusion of Culture in the Self (ICS) scale. In addition, there were positive correlations between perceived social support from teachers, beliefs about spending time in nature in the future, beliefs about practicing culture in the future, and more general concepts of positive future selves. These results suggest that multiple domains may play a role in the development of concepts of possible future selves among adolescents who are identified as being at risk for negative outcomes, such as dropping out of high school. Multiple regression analyses showed that a belief about spending time in nature was particularly important for at-risk adolescents’ concepts of future selves, underscoring the need for more research examining the implications of connectedness to nature in adolescent development.

Surprisingly, substance use was positively correlated with adolescents’ associations to culture and their concepts of positive future selves, but negatively correlated with concepts of self in relation to nature.

The lack of a relationship between self-reflection and substance use is consistent with the mixed findings in previous research (Mason et al., 2009; Springer et al., 2004), though both subscales of the SRIS-Y did have positive correlations with the social items of the Identification Task that approached significance. Due to the lack of a relationship between self-reflection, substance use, and future selves, there was no reason to test if self-reflection served as a mediator between concepts of self in relation to others, culture, and nature on the one hand, and substance use and concepts of future selves on the other. It is possible that the
lack of significant relationships between self-reflection and other variables is because the scale did not tap into the construct of self-reflection adequately for this particular sample. However, the two subscales of self-reflection were positively correlated with one another, which is consistent with the previous research (Sauter et al., 2010), suggesting that participants in the present research were responding to this scale in ways that were consistent with other samples.

Other findings related to substance use among at-risk adolescents were interesting. As mentioned, substance use was positively correlated with associations to culture and concepts of positive future selves. This finding suggests that adolescents who are at risk for negative outcomes may be developing positive associations with substance use or that their concepts of themselves in relation to their culture include positive evaluations or attitudes towards drugs and alcohol. The finding for the positive relationship between associations with culture and substance use is consistent with previous research showing mixed findings regarding the role of culture as a protective factor against substance use (Gazis et al., 2010; Oetting, et al., 1998). In addition, responses for Inclusion of Nature in the Self (INS) task had a negative correlation with alcohol use. This finding is encouraging since there is a dearth of research evaluating the role of concepts of self in relation to nature and how it may impact risk behavior in adolescence.

The results also revealed a negative relationship between perceived support from other students and predicted alcohol that was approaching significance. This finding is inconsistent with previous research suggesting that greater perceived social support from peers tends to positively relate to adolescent alcohol consumption (Hamden-Mansour et al., 2007; Tomcikova et al., 2011; Urberg et al., 2005). More research is needed to examine whether ‘peers’ and ‘other students’ are conceptually similar for adolescents, and whether the nature of the relationship between perceived social support from peers/students and substance use is different for adolescents who are at greater risk for negative outcomes compared to other adolescents. The present findings were consistent, however, with previous research showing a dissociation between different types of social support (Tomcikova et al., 2011). While the student and teacher support scales were positively related to one another, these constructs did not share any of the same relationships with other variables. For instance, perceived social support from other students was associated with cultural aspects in
a way that perceived support from teachers was not. Once again, more research is needed to better understand adolescents’ conceptions of these forms of social support.

In the present research, the Inclusion of Culture in Self (ICS) scale was adapted from the Inclusion of Other in the Self (IOS) scale developed by Aron et al. (1992). Despite the novelty of the ICS scale, it appears that the measure does tap into adolescents’ concepts of their own culture as ICS was positively correlated with cultural pride and the likelihood to practice one’s culture in the future. The ICS scale had positive correlations with two social measures assessing adolescent self-concepts in relation to others: the IOS scale and perceived social support from students. In addition, the IOS scale had positive relationships with cultural pride and perceived social support from students, and perceived social support from students was positively correlated with both perceived social support from teachers and cultural pride. Together, these findings are consistent with previous research that suggests there is conceptual overlap between cultural and social group memberships and their perceived importance in concepts of self (Usborne & Taylor, 2010; Tanti et al., 2011). In addition, the positive relationship between the natural kind items and social kind items of the Identification Task indicate relationships between adolescents’ concepts of self in relation to others and to nature.

Finally, the results of the present research revealed an inverse relationship between the positive future self-concept items and negative future self-concept items, which is supported by previous research asserting that positive and negative future selves are distinct constructs (Aloise-Young et al., 2001).

**LIMITATIONS**

There are several limitations to the study that constrain the external and internal validity of the results. The sample was not randomly selected but instead chosen by individuals from the research site independently of the researcher. Furthermore, the data were not obtained consistently across time; some participants completed the survey in one 35-minute period as opposed to other participants who needed additional time on different days in order to complete the survey. The sample consisted of Latino adolescents with varying proficiency in English and thus some of the language in the surveys may have been less accessible. Spanish surveys were available and several students completed the surveys in
Spanish, however the surveys were translated directly from English into Spanish by two colleagues and were not back-translated. While the majority of the items on the surveys were adapted from standardized, validated measures, the few items that were not may not have been valid measures of the construct they sought to represent. In addition, the SRIS-Y is considered a valid scale for self-reflection in youth and adolescents, however the studies assessing the scale were done with a majority Dutch sample. Perhaps the SRIS-Y items are more appropriate for Dutch adolescents than at-risk Latino adolescents when measuring self-reflective tendencies. The data were also obtained through adolescent self-reports, which can be subject to false responses, though a social desirability check did not indicate such response bias was a factor in the present study.

**FUTURE DIRECTIONS**

While fully acknowledging the aforementioned limitations and their impact on the validity of the study, there are promising implications for future research with at-risk adolescents and understanding the role of concepts of self in relation to culture, nature, and others in outcomes such as self-reflection, substance use, and possible future selves. Adolescent concepts of self in relation to culture, nature, and others evaluated through multiple measures were related to each other, substance use, and future self-concepts. Though the nature of causal directions cannot be determined due to the data being exclusively correlational, there appears to be a strong, multi-faceted interconnection between all of these variables that is beneficial for future concepts of self research and designing effective substance use interventions for at-risk adolescents. Unexpectedly, self-reflection did not relate to the majority of outcome variables or concepts of self in relation to nature, culture, and others. However, self-reflection may still be important to the development of adolescent cognition and more culture-specific measures should be incorporated into future research designs with diverse adolescent samples to further understand its impact on adolescent self-perceptions and risk behavior.
REFERENCES


Usborne, E., & Taylor, D. M. (2010). When I know who “we” are, I can be “me”: The primary role of cultural identity clarity for psychological well-being. Transcultural Psychiatry, 47, 93-111.


APPENDIX A

SELF-REFLECTION AND INSIGHT SCALE FOR YOUTH
I often examine my feelings
I often think about how I feel about things
I find it really interesting to examine what I think about
I often take time to think back on my thoughts
I have a definite need to understand how my mind works
I’m not really interested in studying my behavior
I rarely spend time “self-reflecting”
It’s important for me to try to understand what my feelings mean
I don’t often think about my thoughts
It’s important for me to be able to understand how my thoughts arise
I don’t really think about why I behave in the way that I do
I’m often confused about how I really feel about something
I often find it difficult to really understand how I feel about things
I often notice that I’m feeling something, but I often don’t know what exactly I’m feeling
My behavior often puzzles me
I usually know why I feel the way I feel
Thinking about my thoughts makes me more confused
APPENDIX B

INCLUSION OF OTHER IN THE SELF (IOS) SCALE
APPENDIX C

IDENTIFICATION TASK
Circle any of the following things that make you who you are. You do not have to circle anything.

Rivers     Bread       Clothing      Birds         Candy             Family
Trees     Cigarettes       Books          Rocks          Clouds             Cell Phones     Sky
Mammals    Neighbors       Computers          Fish          Alcohol          Vegetables       Cars
Fast Foods Teachers    Sun         Government     Flowers        Fruit              Friends
APPENDIX D

MEASURES OF PERCEIVED SOCIAL SUPPORT
Please circle the number that reflects how much you agree with the following statements (with 1 being “strongly disagree” and 10 being “strongly agree”):

I feel very close to other students.

There are other students who would take the time to talk over my problems, should I want to.

When I am with other students I feel completely able to relax and be myself.

I feel that other students really care about me.

I often feel really appreciated by other students.

I feel very close to teachers and staff.

There are teachers and staff who would take the time to talk over my problems, should I want to.

When I am with teachers and staff I feel completely able to relax and be myself.

I feel that teachers and staff really care about me.

I often feel really appreciated by teachers and staff.
APPENDIX E

INCLUSION OF CULTURE IN SELF SCALE
APPENDIX F

CULTURAL PRIDE
Please list one or two cultures or ethnic groups that you feel most closely connected to. You can list either one or two – whatever feels right to you.

A. ________________________________

B. ________________________________

On a scale from 1 to 10, with ‘1’ being ‘Not Very Proud’ and ‘10’ being ‘Very Proud’, please circle the number that reflects how proud you are to be a member of Culture A.
APPENDIX G

INCLUSION OF NATURE IN SELF SCALE
Please circle the picture below that best describes the way you see the relationship between your self and nature.
APPENDIX H

CONCEPTS OF POSSIBLE FUTURE SELVES
How likely do you think each of the phrases below will describe you in the future? On a scale from 1 to 10, with 1 being Very Unlikely and 10 being Very Likely, how likely do you think these phrases will describe you?

Happy
Confident
Depressed
Lazy
Have lots of friends
Homeless
Have nervous breakdown
Sexy
Healthy
Wrinkled
Paralyzed
Speak well publicly
Make your own decisions
Manipulate people
Steal
Be powerful
Be trusted
Be unimportant
Offend others
Be unemployed.
Have a job.
Travel.
Spend time in nature.
Protect the environment.
Start your own business.
Go to college, university, trade school, or another form of higher education.
Practice my culture.
APPENDIX I

PAST AND PREDICTED ALCOHOL, CIGARETTE, AND DRUG USE
These questions ask about smoking, alcohol use, and drug. These reports are completely anonymous, which means that nobody will know that your responses come from you.

Please circle the response that best reflects **how many times you smoked cigarettes in the past 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25

Please circle the response that best reflects **how many times you think you will smoke cigarettes in the next 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25

Please circle the response that best reflects **how many alcoholic drinks have you had in the past 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25

Please circle the response that best reflects **how many alcoholic drinks you think you will have in the next 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25

Please circle the response that best reflects **how many times you used drugs in the past 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25

Please circle the response that best reflects **how many times you think you will use drugs in the next 30 days.**

0 1 or 2 3 to 5 6 to 11 12 to 25 More than 25