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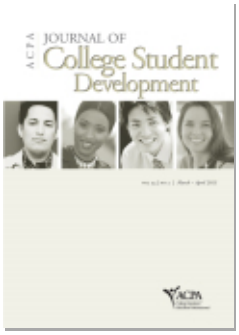

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Involvement in health-endangering behaviors is considered a reflection of college students' psychosocial development; however, not all students participate in these activities. Emotion skills, such as the ability to interpret and manage emotions, may serve as a protective factor against risk-taking behavior among emerging adults. We compared the contributions of emotional intelligence and self-esteem, a commonly studied risk factor, to engagement in risk-taking behaviors among undergraduates (N = 243). Structural equation modeling revealed that emotional intelligence, but not self-esteem, was related significantly to risky behaviors. These findings lend support to the literature showing that emotional intelligence may serve as a protective factor for college student risk taking.

The transition to college coincides with a period of development, known as late adolescence or emerging adulthood, marked by peak engagement in risky behaviors such as unprotected sex, risky driving, and substance use (Arnett, 2000). The American College Health Association (2010) reports that more than one quarter of college-aged individuals (ages 18–25 years) engage in promiscuous sexual activity, including intercourse with multiple partners and failure to use condoms. According to the Substance Abuse and Mental Health Services Administration (2010), one quarter of college students in the United States smoke cigarettes, nearly one quarter use illicit drugs, and nearly half engage in heavy drinking. Moreover, half of the drunk drivers involved in fatal car crashes fall into this age group (U.S. Department of Transportation, 2010). These statistics indicate that a majority of the college-aged population is participating in behaviors that pose threats to their safety, health, and well-being. Therefore, the development of effective interventions to reduce risky behaviors among college students is imperative, and also contingent in part upon identifying the factors that promote and prevent these behaviors.

Arnett's (2000) theory of emerging adulthood sheds some light on the sociocultural factors that may contribute to increased risk involvement among individuals in this age group in industrialized countries. The characteristics of this developmental period are instability, identity exploration, reduced parental monitoring, and a general lack of commitment to the familial and financial responsibilities and roles of adulthood (Arnett, 2000; Nelson & Barry, 2005). It is a time of independence that can be both thrilling and emotionally turbulent (Arnett, 2007). There also is some empirical support for the hypothesis that sensation seeking and risk behaviors increase among this population, in

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part, as a result of the desire to gain a broad range of experiences before settling into adult roles (Arnett, 2000; Rolison & Scherman, 2003). Others have theorized that such risk behavior might be a method of coping with the anxiety brought on by the transition to college (LaBrie, Kenny, Lac, & Garcia, 2009). In fact, college students engage in significantly higher rates of drinking than their non-matriculating peers (Dawson, Grant, Stinson, & Chou, 2004; Substance Abuse and Mental Health Services Administration, 2010). Whether these emerging adults are coping with negative emotional states or facing the challenge of regulating the desire to gain new, albeit risky, experiences, an overarching concern is how this population understands and addresses emotions of high and low arousal and valence during this developmental period. A recent survey of more than 200,000 college freshmen found that their self-reported emotional health was at its lowest point since the survey first was administered in 1985 (Pryor, Hurtado, DeAngelo, Palucki Blake, & Tran, 2010). Thus, it seems especially salient to consider how emotion skills might help emerging adults to adjust to life both in and beyond college.

The skills that comprise emotional intelligence, including recognizing and regulating emotions, may play an important role in curbing risk taking. Emotions drive attention, motivation, and memory, helping us to learn, make wise decisions, and maintain positive social relationships (Baumeister, Vohs, DeWall, & Zhang, 2007; Damasio, 1994; Ekman, 1973; Izard, Fine, Mostow, Trentacosta, & Campbell, 2002; Keltner & Haidt, 2001; Lazarus, 1991). According to the theory of emotional intelligence, emotions are adaptive when the information they provide is perceived, used, understood, and managed effectively (Mayer & Salovey, 1997; Salovey & Mayer, 1990). The theory also posits that these emotion skills help to promote personal growth, maintain mutually supportive relationships, and achieve optimal success in school or the workplace (Mayer, Salovey, & Caruso, 2008). Recent research on emotional intelligence shows that emotion skills, as assessed with performance-based assessments, are positively related to healthy personal and social functioning and academic success among college students (see Mayer et al., 2008; Mayer, Roberts, & Barsade, 2008, for reviews). Other empirical evidence shows that first-year college students with limited emotion skills, specifically skills related to understanding and recognizing emotions, had more difficulty adjusting to college during their first semester than their more emotionally aware peers (Kerr, Johnson, Gans, & Krumrineet, 2004).

Emotional intelligence may act as a buffer against risk-taking. For example, among adolescents ages 11 to 18, scores on an emotional intelligence test correlated negatively with alcohol and tobacco use (Trinidad & Johnson, 2002). Among college students, lower emotional intelligence scores were associated with illegal drug use, social deviance (e.g., fighting), and alcohol consumption, especially among male students (Brackett, Mayer, & Warner, 2004). However, the small number and limited scope of these studies (e.g., neither included assessments of engagement in risky sexual behaviors) calls for new research and replications of previous findings. Furthermore, none of the previous studies on emotional intelligence and risk taking compare the relative contributions of emotional intelligence and a traditionally accepted predictor of risky behaviors, namely, self-esteem.

Traditionally, self-esteem has been regarded as a key factor in understanding engagement in risk taking (Baumeister, Campbell, Krueger, & Vohs, 2003). Myriad intervention programs are designed to raise self-esteem (e.g., the National Council for Self-Esteem), but most are unsuccessful in reducing participation

in risky behaviors (Baumeister et al., 2003). This is not surprising given the inconsistent relationship between self-esteem and risk taking. For example, low self-esteem is related to later delinquency and antisocial behavior (Trzesniewski et al., 2006), but inflated, threatened, and unstable high self-esteem also are associated with increased violence and aggression (e.g., Baumeister, Bushman, & Campbell, 2000; Baumeister, Smart, & Boden, 1996). Moreover, individuals with high self-esteem tend to underestimate the riskiness of their behaviors, resulting in decreased discretion (e.g., women with high self-esteem tend to believe that they will not suffer negative consequences from engaging in unprotected sex; Smith, Gerrard, & Gibbons, 1997). Such individuals also may overestimate the prevalence of their peers' engagement in risky behaviors (see Gerrard, Gibbons, Reis-Bergan, & Russell, 2000, for a review), a factor that has been shown to predict risk involvement in college students (Rolison & Scherman, 2003). Furthermore, Gerrard and colleagues (2000) found that adolescents ages 15 to 18 with high self-esteem, but not those with low self-esteem, systematically adjusted their perceptions of their parents' judgments of their drinking to be more accepting of it, thus justifying their engagement in it. Raising self-esteem, then, may not be the route to reducing risky behaviors.

Some of the leading developmental theories on risk taking among adolescents and emerging adults point to the likelihood that the processing of emotional information is centrally involved. Fuzzy trace theory posits that the fully developed brain assesses risk by looking at the simplest forms of information related to the situation (e.g., unsupervised frat party, underage drinking, dozens of college students) and combining it with positive (approach) or negative (avoid) affective information acquired through experience (Reyna & Farley, 2006). The adult brain, generally, would view the unsupervised college party with alcohol as a recipe for trouble. However, adolescents and emerging adults do not have fully developed emotion knowledge stores (in part owing to a lack of experience), which renders decisions about risk more difficult to make (Reyna & Farley, 2006; Rivers, Reyna, & Mills, 2008). Instead of perceiving the risks of the party, the pre-adult brain assesses it as an opportunity for novel, uninhibited, and pleasurable experiences in the company of peers. Each of these components is evaluated with positive affect, and thus the decision to approach the situation is reached. Moreover, the pre-adult brain is undergoing neurobiological changes that affect risk assessment. In adulthood, the limbic system and prefrontal cortex are thought to work together to produce rational, goal-oriented behaviors (Casey, Getz, & Galvan, 2008). During adolescence and emerging adulthood, however, the subcortical limbic regions associated with reward seeking, emotion, and memory develop more quickly than, and thus may overpower, the prefrontal cortex (Steinberg, 2008), which is linked with executive function and self-regulation (Casey et al., 2008). This lag in the development of self-regulatory capacities is thought to result in a developmental vulnerability to risk taking, especially in the presence of peers (Casey et al., 2008; Steinberg, 2008).

Additional empirical evidence provides support for the potentially crucial role of emotion skills in evaluating risk. For example, college students who fail to recognize and effectively regulate negative, aroused emotional states are more likely to take risks (Leith & Baumeister, 1996) and have weaker impulse control (Tice, Bratslavsky, & Baumeister, 2001). Individuals who cannot accurately recognize emotional cues also tend to be more hostile, increasing the likelihood that they will

participate in risky behavior (Fishbein et al., 2006). Having the emotion skills to cope with threats to the ego, among other daily emotional triggers, may enable college students to choose healthier regulation strategies. However, to date, there has been a dearth of research on the link between the emotion skills articulated in emotional intelligence theory and maladaptive behavior, as theoretical models and valid performance measures of emotion skills have emerged only recently (Cherniss, 2010).

The purpose of this study was to examine the relative contributions of emotional intelligence and self-esteem in explaining self-reported risky behaviors among college students. We predicted that emotional intelligence would be related inversely to engagement in risky behaviors such as alcohol consumption, promiscuous sex, and delinquency, but that self-esteem would generally be unrelated to these activities given the mixed results documented in the literature.

METHOD

Participants

Two hundred forty-three undergraduates (182 women and 61 men) enrolled in a large, introductory psychology course at a mid-sized, state university in the northeastern United States completed a battery of surveys for course credit. Completion of the measures was one way to meet a course requirement; no additional incentives were offered. Most participants were 18 or 19 years old (89%) and White (97%). The institutional review board for research involving human participants at the university where the research was conducted approved the procedures.

Procedure and Measures

Participants completed the measures described below during class time in a lecture hall. The emotional intelligence and self-esteem measures were completed in one 50-minute class session, and the risky behaviors measure was completed in a subsequent class session of the same length.

Emotional Intelligence. Emotional intelligence was measured with a 141-item performance test, the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002a), which has been validated in more than 20 studies using college students (e.g., Brackett & Mayer, 2003, 2006; Brackett et al., 2004; Lopes, Salovey, & Straus, 2003; Mayer et al., 2008; Rivers, Brackett, & Salovey, 2008). The MSCEIT is composed of eight tasks requiring participants to solve emotion-related problems for each of four emotion skills (two tasks per skill). In the perception of emotion tasks, participants rated emotions in (a) faces and (b) designs and landscapes. In the use of emotion tasks, participants (a) described emotional sensations and their parallels to other sensory modalities, and (b) identified feelings that might facilitate or interfere with the successful performance of various cognitive and behavioral tasks. In the understanding emotion tasks, participants analyzed (a) blended or complex emotions and (b) how emotional reactions change over time and transition into new emotions. In the emotion management tasks, participants assessed effective ways to regulate emotions in (a) private and (b) social situations.

Scores on the MSCEIT are determined by either consensus or expert norms, which are highly correlated (Mayer, Salovey, Caruso, & Sitarenios, 2003). Normative, or consensus, scoring was used in the present study, meaning that responses showing greater agreement with the general consensus (a normative sample of >5,000 individuals from various countries) yielded higher scores (for more information see Mayer et al., 2003). The full-scale, split-half reliability of the MSCEIT is 0.93, with branch score reliabilities all above

0.87 (Mayer, Salovey, & Caruso, 2002b). Test–retest reliability of the MSCEIT is r = 0.86 (Brackett & Mayer, 2003). More information on the psychometric properties of the MSCEIT can be found in Mayer and colleagues (2002b, 2003). We report analyses using the total MSCEIT score owing to our focus on emotional intelligence as an overall construct and not the individual abilities that comprise it. The split-half reliability of the total MSCEIT score in this sample is 0.92.

Self-Esteem. Self-esteem was measured with the widely used 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1986), which assesses global feelings of self-worth and self-acceptance (e.g., "On the whole I am satisfied with myself"). Internal consistency estimates for this scale range from 0.72 to 0.88, and test–retest reliability ranges from 0.67 to 0.82 (see Vispoel, Boo, & Bleiler, 2001, for a review). Participants responded to each item using a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Risky Behaviors. Eleven subscales from the College Student Life Space Scale (CSLSS) were used to measure engagement in risky and other maladaptive behaviors including smoking, alcohol and drug use, minor delinquency, and conflicts with parents and best friends (Brackett & Mayer, 2006). CSLSS items differ from traditional self-report data in that they are based on frequency counts of external, observable, and discrete aspects of a person's behavior and environment (e.g., "How many days in the last month have you had more than 5 alcoholic beverages?") as opposed to internal sentiments or attitudes (e.g., "Do you enjoy drinking alcoholic beverages?"). As such, CSLSS items require less interpretation and abstract judgment from participants and also reduce social desirability response bias compared with traditional self-report scales (Brackett et al., 2004; Mayer, Carlsmith, & Chabot, 1998). Asking the participants to report specific, measurable behaviors instead of feelings, tendencies, and moods reduces the amount of social desirability response bias (Shaffer, Saunders, & Owens, 1986). Each scale had between 5 and 15 items. Internal consistency (measured with Cronbach's alpha) ranged from 0.64 to 0.89, except for delinquency, which was 0.50, a bit lower than desired. We made the decision to include the delinquency scale based on its validity in previous studies related to emotional intelligence (e.g., Brackett et al., 2004).

Analysis

We first conducted a factor analysis of the CSLSS to make the primary analyses more parsimonious. Then, we conducted zero-order correlations among self-esteem, emotional intelligence, and risky behaviors, and tested the predictive relationships among emotional intelligence, self-esteem, and risky behaviors using structural equation modeling (SEM) techniques.

RESULTS

MSCEIT scores in this sample are comparable to those reported for other college student samples with a mean of 94.96 (SD = 10.36; e.g., Brackett & Mayer, 2003; Brackett et al., 2004). The average self-esteem score was 3.88 (SD = 0.71).

To examine whether the risk behavior scales could be reduced to a more parsimonious set of scales, we subjected the scales to a principal components analysis with oblimin rotation. We chose this technique because reports indicate that the scales are positively intercorrelated (Brackett & Mayer, 2006). The scree plot suggested that a three-factor solution was ideal. Factor-based scales were created using the pattern matrix but with unit weightings. A first-order scale was included on a factor if its loading was above |.40|. There

were two complex scales (alcohol consumption and overt aggression) with loadings above |.40| on more than one factor; these scales were placed on the most conceptually related factor. Factor I was termed "aggressive behavior" and consisted of scales pertaining to both overt and covert aggression, including conflict with significant others. Factor II was labeled "substance abuse" and contained scales assessing smoking, drug use, and alcohol consumption. Finally, factor III was termed "adjustment problems" and was composed of scales pertaining to risky sexual behavior and minor delinquency. The intercorrelations among the factors were $r(241) = .03$, n.s. (factors I and II), $r(241) = -.32$, $p < .001$ (factors I and III), and $r(241) = -.18$, $p < .01$ (factors II and III).

Table 1 shows zero-order correlations among emotional intelligence, self-esteem, and risky behaviors, which were all in the expected direction. There were no differences by gender in the sizes of the correlations between emotional intelligence and the outcomes; thus, we report analyses for the full sample only. MSCEIT total scores correlated significantly (negatively) with all three of the higher-order factor scores (aggressive behavior, substance abuse, and adjustment problems), and 6 of the 11 CSLSS subscales. Self-esteem was not related to any of the higher-order factors, but was significantly related (negatively) to two first-order scales (conflict with parents and unhealthy life style).

To test the primary hypothesis that emotional intelligence explains more variance in risky behaviors than self-esteem, we performed SEM using Amos 6.0. Emotional intelligence was specified as an exogenous latent variable, and self-esteem, which was measured by a single scale, was set as an exogenous indicator. The three categories of at-risk behaviors (the higher-order factors of the CSLSS) were specified as endogenous latent variables and regression effects were allowed from emotional intelligence and self-esteem. Model estimates were calculated using the maximum-likelihood method. The final SEM model included correlated error terms among the three endogenous latent variables and between two indicators of emotional intelligence, perceiving and managing emotion. Goodness-of-fit indexes indicated a moderately good fit between the hypothesized model and the observed data ($\chi^2 = 155.83$; $df = 95$; $p < .001$). The root mean square error of approximation was 0.051, which is considered a good fit (Browne & Cudeck, 1993). The goodness of fit and adjusted goodness of fit were 0.926 and 0.894, respectively. Although a threshold of 0.90 for adjusted goodness

TABLE 1.
Zero-Order Correlations Between Emotional Intelligence, Self-Esteem, and Risky Behaviors

	Emotional Intelligence	Self-Esteem
Substance Abuse	–.18**	–.10
Drug use	–.13*	–.08
Smoking	–.11	–.10
Alcohol	–.14**	–.03
Adjustment Problems	–.16*	–.07
Unhealthy lifestyle	–.12	–.22**
Promiscuity	–.08	.06
Delinquency	–.16**	–.01
Aggressive Behavior	–.25**	–.13
Conflict with best friends	–.21**	–.12
Conflict with parents	–.10	–.21**
Stealing	–.27**	–.09
Verbal aggression	–.10	–.04
Overt aggression	–.19**	–.10

*$p < .05$. **$p < .01$.

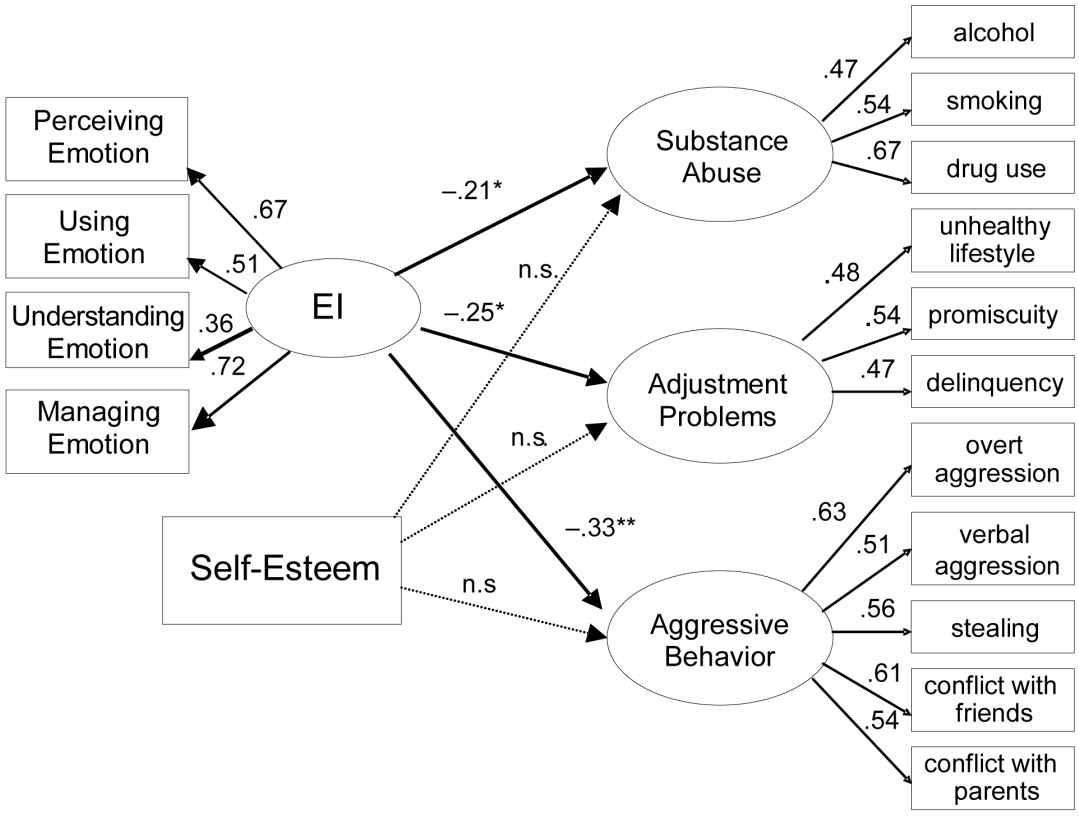

FIGURE 1. Emotional Intelligence and Self-Esteem as Predictors of Risky Behaviors

of fit is recommended, exceeding 0.80 is considered a good fit (Chin & Todd, 1995). Therefore, we concluded that the model fit was acceptable. The summary of parameters in the final model is presented in Figure 1, in which coefficients are demonstrated in standardized form. As Figure 1 shows, all the paths from emotional intelligence to the three behavioral categories specified for the SEM analyses were significant: Aggressive behavior, substance use, and adjustment problems (t = –2.95, –1.99, and –2.13, respectively; p < .05). Each path was negative, indicating that higher emotional intelligence scores were associated with a lower likelihood to engage in risky behaviors. The paths from self-esteem to risky behaviors were not significant.

DISCUSSION

The results of this study support the prediction that, among college students, emotional intelligence is related inversely to risky behaviors, including those linked to substance abuse, adjustment problems (e.g., promiscuity, delinquency) and aggression. The second hypothesis also was supported: Self-esteem was not associated significantly with any of these risky behaviors. These findings contribute to the literature showing that emotional intelligence may provide college-aged youth with the necessary skills and strategies to resist risky behavior (Brackett et al., 2004; Rivers, Reyna, et al., 2008), but that self-esteem may be an unlikely protective factor for risky behavior in college students (Baumeister et al.,

2003). This study also extends a growing body of research suggesting that college students with higher emotional intelligence tend to have enhanced psychosocial functioning, including stronger support networks, more positive relationships, better academic performance, and more adaptive decision making skills than those with lower emotional intelligence (Lopes, Salovey, Côté, & Beers, 2005).

The theory of emotional intelligence postulates that emotion skills play an important role in self-regulatory processes by providing individuals with the skills to perceive, use, understand, and manage emotions in ways that promote personal growth and healthy interpersonal relationships (Mayer & Salovey, 1997; Salovey & Mayer, 1990). Although we did not examine the direct relationship between emotion and self-regulatory processes in this study, our findings provide support for a self-regulatory function in that emotional intelligence was associated negatively with activities reflecting dysfunctional and unregulated behavior, including conflict with best friends, overt and verbal aggression, and stealing. This is consistent with research showing that individuals are more likely to engage in risky behaviors when their negative moods are not regulated (e.g., Baumeister & Scher, 1988; Leith & Baumeister, 1996). When in a negative mood, individuals are likely to be persuaded by benefits accrued in the short-term, despite longer-term risks (Baumeister & Scher, 1988). A variety of maladaptive behaviors, such as substance use, unprotected sex, delinquency, and aggressive behaviors, tend to occur as a result of decisions made under less than optimal conditions, like emotional distress. However, students with high emotional intelligence may be better able to organize and reason about emotion-laden situations, which in turn should reduce their engagement in risk-taking (Mayer et al., 2008; Mayer, Perkins, Caruso, & Salovey, 2001). Thus, future research should focus on the role of emotional intelligence in decision making about risk, particularly during the experience of strong negative emotions. Being able to recognize a negative emotional state, understand its impact on thinking, generate alternative emotional states, and manage the effects of the negative emotion may facilitate the avoidance of risk. Additional research also is necessary to examine the mechanisms by which emotional intelligence may protect individuals from risky behaviors. Last, the causal direction of the links between emotional intelligence and risk behaviors requires further exploration, because it is possible that engaging in risky behaviors impairs the development of emotion skills.

Limitations

The observed difference between emotional intelligence and self-esteem in their associations with at-risk behaviors may in part be explained by methodologic differences in how these variables are operationalized and measured. As a conventional self-report questionnaire, scores on the Rosenberg Self-Esteem Scale may only reflect perceived well-being at the time of test taking, whereas scores on the MSCEIT measure skills in each of the four areas of emotional intelligence, which are relatively stable (Brackett & Mayer, 2003). The fluctuation of one's self-esteem also is noteworthy (Kernis, Cornell, Sun, Berry, & Harlow, 1993). Therefore, alternative methods for measuring self-esteem, including the use of experience sampling (Hektner, Schmidt, & Csikszentmihalyi, 2006), could help to clarify the findings from this study. Furthermore, although the CSLSS is less vulnerable to social desirability bias than traditional self-report measures (Brackett et al., 2004; Mayer et al., 1998), it cannot eliminate it. Collecting perceptions of engagement in risky behaviors from participants' friends and family members might be one feasible way to strengthen these assessments.

Implications

The implications of these findings, although still preliminary, are important. They suggest that student affairs personnel may want to prioritize identifying and integrating intervention programs to build students' emotion skills in attempts to positively affect outcomes related to risk behaviors. Ideally, programs would begin during college orientation and continue throughout the college years. Social and emotional learning programs, for example, have been found to significantly improve social and emotional skills, attitudes, behavior, and academic performance among students in kindergarten through twelfth grade (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), and to improve executive functioning, such as inhibitory control (Greenberg, 2006), which may place youth ahead of the curve in terms of developmental, neurobiological predispositions to risk.

To better prepare students for the challenges they face as they enter college, then, elementary and secondary school personnel should adopt social and emotional learning programs that (a) use a step-by-step approach, (b) focus on active learning, (c) develop skills, and (d) have explicit learning goals (Brackett et al., 2009; Durlak et al., 2011). Emotional skill building can continue on college campuses. Although current intervention programs aim to raise college students' awareness of the consequences of risk behaviors (e.g., BASICS: Dimeff, Baer, Kivlahan, & Marlatt, 1999; Wechsler, Seibring, I-Chao Liu, & Ahl, 2004) and even of negative emotional states (e.g., Field, Elliott, & Korn, 2006), interventions that specifically aim to hone the skills necessary for understanding and regulating emotions effectively may take these efforts a step further. The second author, for example, has designed an introductory college course highlighting for students how emotion skills relate to their mental health, social success, and other factors contributing to quality of life at home, work, and school. In addition to giving students feedback on their own emotional intelligence scores and raising awareness about the correlates of emotion skills, the course teaches strategies for recognizing, understanding, labeling, expressing, and regulating emotions. Campus-wide interventions based on a model such as this one could be developed and assessed.

College counselors and peers may be uniquely positioned to help students build emotion skills. Counselors could focus on building relationships with individual students that emphasize identifying the emotions they are experiencing and the causes of these emotions, and then offering concrete strategies for regulating those emotions in the short and long term. Peer-led orientation programs could draw attention to the emotions salient to particular risky situations (e.g., fear of not meeting perceived norms related to drinking and sex; desire to escape anxiety about academic pressures) and discuss strategies and provide peer-endorsed, health-enhancing alternatives for handling these emotions. Well-designed programs that teach students to interpret, understand, and manage the emotional valence and arousal that accompany risky situations may help students to choose positive, adaptive courses of action. Other interventions have been shown to impact college students' attitudes and opinions about health-promoting behaviors (e.g., Sharp, Hargrove, Johnson, & Deal, 2006), and the dosage in the emotional intelligence course described above is considerably higher (two class meetings per week for one full semester).

CONCLUSION

This study provides preliminary support for the hypothesis that the skills associated

with perceiving, using, understanding, and managing emotions may serve to protect college students from involvement in risky behaviors. Importantly, it also suggests that emotion skills may be a more relevant intervention target than self-esteem with regard to college students' engagement in risky behaviors. More research is needed to examine the causal relationship between emotional intelligence and risk taking among college students, and future research should both test the mechanisms by which emotion skills serve as a buffer against engaging in risky behaviors and evaluate the effectiveness of interventions designed to teach such skills to emerging adults on college campuses.

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