

Variables Affecting Emerging Adults' Self-reported Risk and Reckless Behaviors

Abstract

Young adults' behaviors are frequently characterised by risk-taking and recklessness. Few studies have examined the correlates of risk and reckless behaviors in emerging adults. Drawing on theories emphasising multifactorial effects of personality, social, and cognitive variables, this study explores psychosocial factors contributing to risk and three types of reckless behaviors in a sample of 607 18-29 year olds. Predictors were sensation seeking, anti-social peer influence, and present and future time perspectives. Sensation seeking predicted self-reported risk behaviors and reckless sexual behaviors, while peer influence predicted reckless self-reported substance use and reckless sexual behaviors. Present time perspective predicted reckless substance use, while future time perspective predicted reckless sexual behaviors. Several relationships were moderated by sex or age. The study extends understanding of risk-taking and recklessness beyond the adolescent years, identifying future research and intervention opportunities.

Keywords: Risk behaviors; Reckless behaviors; Peer influence; Emerging adults; Sensation seeking; Time perspective

1. Introduction

A large body of research has documented the frequency with which adolescents engage in risk-taking and reckless behaviors (for reviews, see Chassin, Hussong, Barrera, Molina, Trim, & Ritter, 2004; Igra & Irwin, 1996). However, few studies have investigated these behaviors in samples of young adults, or what Arnett (2000) calls “emerging adults”. Evidence nevertheless suggests that problem behaviors, whilst possibly different in kind, are no less common and no less harmful in the 18-25 years age group than they are during adolescence (Arnett, 1991, 1996, 1998, 2000; Greene, Krcmar, Walters, Rubin, & Hale, 2000). In the current study, we propose and test a model of psychosocial predictors of reckless behaviors in emerging adults, the current sample also extending the age range of emerging adults studied.

1.1. Risk-taking and Recklessness in Emerging Adults

“Emerging adulthood” refers to the period from late teens through the twenties, (Arnett, 2000, 2001). Research shows that this age group is more likely than younger or older samples to engage in risk and reckless behaviors, for example being the period of highest drug use (Arnett, 2005; Johnston, O’Malley, & Bachman, 2003), reckless driving (Jonah, 1990), reckless sexual activities (National Centre in HIV Epidemiology and Clinical Research, 2005), and sexually transmitted diseases (Stein, Newcomb, & Bentler, 1994). Jessor and Jessor (1977) argued that risk and reckless behaviors tend to form a coherent “syndrome”. In support of this, Byrnes (2003) found positive

relationships between young people's binge drinking, smoking, marijuana use, delinquent behaviors and premarital sexual intercourse.

In this study we propose and test a parsimonious psychosocial model for predicting risk-taking behaviors and developing appropriate interventions. We adopt a distinction used in previous research on emerging adults (e.g., Arnett, 1991, 1992, 1998; Bradley & Wildman, 2002), which used "risk behavior" to refer to adventurous, thrill-seeking, socially approved behaviors (e.g., motorbike riding, mountain climbing, bungee jumping), and "reckless" for behaviors that threaten safety and lack social approval (e.g., drink-driving, substance abuse, unsafe sex). Consistent with Arnett (2000), we consider emerging adulthood as stretching from late teens to late twenties. Limited research has investigated risk and recklessness in participants whose ages span the full range of these years. For example, Arnett's (1991) sample was aged 23-27 years, Bradley and Wildman's (2002) ranged from 18 to 25 years, and Rolison and Scherman's (2003) participants were between 18 and 21 years. Our study extends participants' age range to between 18 and 29 years. Most researchers (e.g., Arnett, 1991; Rolison & Sherman; Wagner, 2001) used exclusively college student samples. Arnett (2000) discussed limitations of this approach. Our sex- and age-balanced sample included both student and general population participants.

1.2. Psychosocial Theories of Risk-taking and Reckless Behavior

Theories that may be applied to emerging adult risk-taking and recklessness include the theory of reasoned action/planned behavior (Ajzen, 1991), the health belief model (Rosenstock, 1974) and problem behavior theory (Jessor & Jessor, 1977). Such theories

specify the roles played by personal (e.g., attitudinal), social (e.g., normative pressures) and cognitive (e.g., perceived control) variables in shaping behavior. Many of these theories' predictor variables can be changed, thereby representing possible intervention targets (Clapper, Martin, & Clifford, 1994). For this study, we drew on these multifactorial psychosocial theories, and on time perspective theory (e.g., Zimbardo & Boyd, 1999). The multifactorial theories served as analogies for the development of our own model. Predictors in our model of age-related changes in emerging adult risk and reckless behaviors were sensation seeking tendencies (personality domain), peer influence (social domain), and present and future time perspectives (cognitive domain). By selecting across these domains, we sought to minimise redundancy between predictors. By limiting our model to just four predictors, we aimed for parsimony, and as elaborated below, by selecting predictors for which considerable evidence has been previously accumulated, we also aimed to maximise the variance explained in the criteria.

1.3. Sensation Seeking

Sensation seeking is characterised by, “the need for varied, novel and complex sensations and experiences, and the willingness to take physical and social risks for the sake of such experience” (Zuckerman, 1979, p. 10). Sensation seekers enjoy intense and unpredictable experiences, which may place them in danger (Arnett, 1998). In adolescents, sensation seeking is associated with drink-driving¹ (Arnett, 1990) and alcohol use (Ham & Hope, 2003). It is also associated with risk and reckless behaviors in young adults (Rolison & Scherman, 2003; Rosenbloom, 2003). Among participants

¹ The term ‘drink-driving’ is commonly used to refer to occasions when a driver is over the extant legally defined blood alcohol concentration limit for the relevant jurisdiction.

in their twenties, Arnett (1991, 1996, 1998) and Wagner (2001) found sensation seeking to be associated with dangerous driving, drug use, reckless sexual behavior, vandalism and theft.

1.4. Anti-social Peer Influence

Many studies of adolescents have shown anti-social peer influence to predict such problem behaviors as delinquency, marijuana use, alcohol problems, and precocious sexual activity (Farrell & White, 1998; Jaccard, Blanton, & Doidge, 2005; Jessor, Chase, & Donovan, 1980). Some studies also demonstrate such effects on reckless behaviors during emerging adulthood. Gardner and Steinberg (2005) showed that peer presence influenced risk-taking among 18-22 year olds more than among older participants (but less than in 13-16 year-olds). Bradley and Wildman (2002) found effects of antisocial peer pressure on emerging adult recklessness, but not on (socially approved) risk behaviors. In that study, peer pressure effects were evident after controlling for demographic variables and sensation seeking. Evidence of peer influence from field research is strongest for alcohol and substance use (for a review see Borsari & Carey, 2001). For example, in a study of 208 emerging adults, Teese and Bradley (2008) found weaker effects of peer pressure on reckless sexual and driving behaviors than on reckless substance use.

1.5. Present and Future Time Perspectives

Zimbardo and Boyd's (1999) theory of time perspective proposed that *present time perspective* comprises (a) hedonistic time perspective – desires to pursue immediate,

gratification-oriented goals, and (b) fatalistic time perspective – general pessimism and a sense of hopelessness. In contrast, *future time perspective* represents a tendency to abstain from immediate pleasure to obtain long-term rewards. These two time perspectives may be particularly relevant in understanding the transition through the emerging adult years. As Arnett (2000) noted, like adolescence, emerging adulthood is a time of exploration, but unlike the earlier phase of life, it is a time when explorations become more focused, serious and future-oriented. Whilst emerging adults revel in the opportunities and autonomy provided by their *present* life circumstances, increasingly with age, they give consideration and make commitments to *future* directions. Along with this shift from present to future time perspective comes a likely reduction in thrill-seeking and health-endangering behaviors.

Consistent with these views, in samples of young people, present time perspective has been shown to correlate positively with reckless driving (Zimbardo, Keough, & Boyd, 1997), frequent sexual behavior and more sexual partners (Rothspan & Read, 1996), and alcohol, cigarette and illegal drug use (Wills, Sandy, Yaeger, & Shinar, 2001). In contrast to those high in present time perspective, individuals high in future time perspective are less likely to engage in risk and reckless behaviors.

Compared to those with a low future time perspective, high future time perspective individuals report less reckless driving (Zimbardo et al., 1997), fewer sexual partners (Rothspan & Read, 1996), and less substance use (Hall & Fong, 1997; Henson, Carey, Carey, & Maisto, 2006; Wills et al., 2001). They also report more health protective behaviors such as condom use (Henson et al., 2006), eating low-fat food, dental flossing, and using seat belts (Hall & Fong). Whilst time perspective effects have been shown to persist after controlling for other factors (Hall & Fong; Zimbardo et al.;

Zimbardo & Boyd, 1999), no prior study has examined their contribution to the prediction of risk and reckless behaviors in conjunction with sensation seeking and peer pressure.

1.6. Differences in Effects across Age Groups

Research supports two age-related trends during emerging adulthood. First, there is evidence that risk and reckless behaviors decline monotonically. For example, Jessor, Turbin, and Costa (1997) conducted a cross-sequential study showing that reckless driving decreased linearly between 18 and 25 years. This can be explained by increased psychosocial maturity (e.g., impulse control, egocentrism), and increased parental, occupational and other role responsibilities during emerging adult years. The trend is consistent with Jessor's (1992) "functional" explanation of youth problem behavior, namely, that as young people engage in problem behaviors to affirm their maturity, these behaviors become redundant after completing the transition to adult status.

Most past research implicitly assumes that the selected predictors of youth risk and recklessness have constant effects across the age ranges studied. Yet, during times of rapid psychosocial development such as adolescence and emerging adulthood, this may not be the case. If predictors have varying effects at different ages, this has important implications for the timing of interventions. To examine this issue in more detail, we tested for possible age-related changes in risk and reckless behaviors as an inverted-U pattern during emerging adulthood. Support for this non-linear trend is stronger for substance use than it is for other risk and reckless behaviors (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Martin & White 2005). Whilst reduced risk and recklessness during the late-twenties can be explained in terms of

variables already mentioned, the incline during the 18-22 age group may be due to greater autonomy and lowered parental monitoring (Arnett, 1998; 2000). While trajectories may vary between groups and behaviors (Maggs & Schulenberg, 2004), on balance the evidence suggests that the pattern of change in emerging adult risk-taking and recklessness generally follows an inverted-U shape.

Also of interest are possible age-related changes in levels of our predictor variables and in their relationships with reported behaviors. Some authorities have claimed that levels of sensation seeking (Arnett, 1991; Steinberg & Cauffman, 1996) and peer pressure (Berndt, 1979) peak in mid-adolescence and decline thereafter. There is, however, little evidence as to whether changes in the levels of these predictors lead to similar changes in their effects on risk and reckless behavior. One of the few studies that has shed light on this issue is that of Musher-Eizenman, Holub, and Arnett (2003), which found a consistent effect of friends' behavior on substance across the ages 12 to 22 years, but less stable effects of other predictors such as outcome expectancies during these years. We investigate differences in predictor-criterion relationships as a function of age within our sample.

1.7. Sex Differences

Males report more frequent risk and reckless behaviors than do females, this difference having been demonstrated in all age groups (Arnett, 1996; Jessor et al., 1997). Males also tend to report higher levels of sensation seeking (Arnett, 1994, 1998), antisocial peer pressure (Bradley & Wildman, 2002) and present time perspective, whilst females report higher levels of future time perspective (Zimbardo & Boyd, 1999). Few studies have explored the nature and extent of sex differences in the impact of these predictors

on risk and reckless behaviors. Exceptions include Claes, Lacourse, Ercolani, Pierro, Leone, and Presaghi (2005), who found that the effect of orientation to peers on non-physical antisocial behavior was stronger in late adolescent males than in same-aged females, and Colder and Stice (1998) who found stronger impulsivity-delinquency relationships in males than in females. Zimbardo et al. (1997) reported a Present Time Perspective by Sex interaction effect on risky driving, with present-oriented males reporting more reckless driving than present-oriented females did. In each of these examples, the effect of the predictor variable was stronger for males than for females. However, given that these findings are limited in number and scattered across domains, and that prior studies have neither tested the range of predictor-criterion relationships currently under investigation nor used a sample of 18-29 year olds, directional hypotheses regarding sex differences on the impact of the predictors are not currently proposed.

1.8. Hypotheses

Our study of emerging adults (a) distinguishes major categories of risk and reckless behaviors, (b) samples sex, age and variously sourced groups, (c) draws on relevant psychosocial theories to investigate the impact of predictors from multiple psychosocial domains, and (d) explores possible differences in predictors and predictor-criterion relationships during the emerging adult years. The study also implements several measurement and analytical safeguards, such as selecting a measure of sensation seeking that does not overlap conceptually and/or operationally with the criterion behaviors (Arnett, 1994), using a well-validated measure of time perspective (Henson et al., 2006; Zimbardo & Boyd, 1999), including a scale assessing social desirability

response bias, and updating the content and improving validity of the risk and reckless behavior measure.

We hypothesize that:

1. All reported risk and reckless behaviors will be positively correlated.
2. Males will report more risk and reckless behaviors than females will.
3. A non-linear relationship between age and reckless behaviors will exist, such that these behaviors will be reported most frequently around 21-22 years.
4. Sensation seeking will be positively associated with reported risk and reckless behaviors.
5. Anti-social peer influence will be positively associated with reported reckless, but not with risk behaviors.
6. Time perspective will predict risk and reckless behaviors after accounting for sensation seeking and peer influence, with (a) present time perspective positively related, and (b) future time perspective being negatively related, to these behaviors.

2. Method

2.1. Participants

A pilot study was conducted using a sample of 26 undergraduate students (50% female, mean age 21 years). For the main study, 639 people who drove completed the questionnaire, but 32 of these were discarded due to missing or patterned data. Potential

participants were initially asked whether they held a current open driver's license and in the case of any for whom this was not the case it was indicated that they could not participate in the study. In addition a survey question asked whether participants had access to a motor vehicle when needed, and those who did not were excluded from the analysis. While driving exposure might potentially explain additional variance in the criterion variable, we know of no reason why exposure would vary with our psychosocial predictor variables, and hence no reason why it would detract from the variance explained by our predictors.

The final sample of 607 was from the general population ($N = 353$; 58.2%) and from two universities ($N = 254$; 41.8%). The sample comprised 288 females (47.4%) and 319 males (52.6%). Ages ranged from 18 to 29 years, with each age year having approximately equal numbers (range = 42 to 56). Most participants had completed high school ($N = 561$; 89.5%), and some had completed a university degree ($N = 124$; 20.5%). University-sourced participants were younger than community-sourced participants, $M_s = 22.5$ years and 24.0 years, respectively, $t(605) = 5.25, p < .001$. The sex composition of the two groups did not differ, $\chi^2(1, N = 607) = 0.16, ns$. There was a high likelihood of overlap between the groups in that unknown numbers of participants from universities were working in paid employment, and unknown numbers of community-sourced participants were students.

2.2. Measures

2.2.1. Risk and reckless behavior

The Risk and Reckless Behavior Questionnaire (RRBQ), developed by Bradley and Wildman (2002), was based on Arnett's (1991, 1994, 1998), Jonah's (1990), and Jessor

et al.'s (1997) risk-taking questionnaires. The RRBQ measures the frequency of risk behavior ($\alpha = .63$), and three types of reckless behaviors: reckless substance use ($\alpha = .80$), reckless sexual behaviors ($\alpha = .91$) and reckless driving ($\alpha = .73$). Two-week test-retest reliabilities ranged between .80 and .90 (Bradley & Wildman). In the current study, each RRBQ subscale was expanded from four or five items to six items so as to (a) update scale content (e.g., including a reckless driving item relating to driving whilst using a hand-held mobile phone), (b) include behaviors identified as reckless in recent research (e.g., Teese & Bradley, 2008), and (c) improve discrimination between subscales. Specified substances that respondents were asked to report using were marijuana (single item), "designer" drugs (e.g., angel dust, ecstasy) (single item) and a general item that referred to, "other illicit drugs, including but not limited to amphetamines, cocaine, hallucinogen (e.g., LSD, magic mushrooms)". The other two substance use items used generic wording. While the original scale used pre-grouped frequencies, our participants were instructed to report the number of times that they had engaged in each behavior in the past year in a blank column against each questionnaire item. The one-year recall period was specified to aid comparison with previous research findings (e.g., Arnett, 1996, 1998; Bradley & Wildman, 2002; Clapper et al., 1994; Jessor et al., 1997). Pilot-testing revealed alpha reliability coefficients for the revised subscales of between .66 (for the risk subscale) and .94 (for the reckless sexual behavior subscale).

2.2.2. Sensation seeking

The Arnett Inventory of Sensation Seeking (AISS: Arnett, 1994) has novelty and intensity subscales, each comprising seven positive and three negative items. Responses

on a 4-point scale range from, *describes me very well* to *does not describe me at all*.

Higher scores indicate higher sensation seeking. The scale correlates with other measures of sensation seeking such as Zuckerman, Eysenck, and Eysenck (1978).

Arnett (1994) reported a coefficient alpha of .70 for the AISS.

2.2.3. Peer influence

The Emerging Adult Peer Pressure Inventory (EAPPI: Bradley & Wildman, 2002) measures the extent to which emerging adults feel peer pressure to engage in a range of pro-social and anti-social behaviors. Because piloting showed that young adults were more likely to admit to being influenced rather than pressured to do certain activities, we replaced “pressure” with “influence”. Poles of each of the eight items are represented by opposing behaviors such as, *do the right thing, thoughtful of the consequences* (conventional, pro-social pole) versus *do what feels good, regardless of the consequences* (unconventional, anti-social pole). Three items are reversed-scored and summed responses yield a measure of exposure to antisocial peer influence. Bradley and Wildman reported a coefficient alpha of .76, and a two-week test-retest reliability of .89 for the EAPPI.

2.2.4. Present and future time perspectives

The Zimbardo Time Perspective Inventory (Zimbardo et al., 1997) comprises sub-scales representing future (13 items, $\alpha = .81$), hedonistic (15 items, $\alpha = .80$), and fatalistic (9 items, $\alpha = .74$) time perspectives. The latter two sub-scales combined are a measure of present time perspective. The measure uses a 5-point Likert-type response format

ranging from, *very uncharacteristic of me* to *very characteristic of me*. Zimbardo and Boyd (1999) reported convergent and discriminant validity for the scale.

2.2.5. Social desirability

Form C of the Marlowe-Crowne Social Desirability Scale (M-C SDS; Reynolds, 1982) controlled for social desirability biases. The original true-false format was modified to correspond with the AISS 4-point scale. The 13 M-C SDS items were interspersed with AISS items. Higher scores represent higher social desirability bias.

2.3. Procedure

All participants were recruited in Queensland, Australia, where the legal driving age is 17 years and the legal drinking age is 18 years. Community participants were recruited from public places such as a beach. Potential participants who were judged to be within the sex-balanced target age range were approached by the first author who introduced herself as a student from Griffith University currently investigating young adults' behaviors. They were asked if they would like to volunteer to participate in the study. Those expressing willingness were instructed to read the information sheet regarding the nature and purpose of the study and had any questions answered. It was explained that return of a completed questionnaire indicated consent. Anonymity and confidentiality were affirmed orally and via a written information sheet.

After obtaining all necessary approvals, participants were given the option of either completing the questionnaire whilst the researcher waited or to post it using a reply-paid envelope provided. Around 98% of the questionnaires were completed in the

researcher's presence. Most of the students were enrolled in a first-year psychology program and received course credit for their participation. No other incentives were offered. Participants were advised that they could contact the researchers for a summary of findings.

3. Results

3.1. Scale Properties

Predictor variable distributions indicated no serious violations of normality assumptions. However, the risk and reckless behavior scales, requiring participants to enter the number of times that they had participated in each activity, were significantly ($p < .001$) and positively skewed. Given these large deviations from normality, logarithmic transformations were applied to all risk and reckless behavior variables. After recoding responses to 10-point scales, alpha values were similar to those reported by Bradley and Wildman (2002) for the original scale. Table 1 shows means, standard deviations, and other univariate statistics relating to the scaled variables.

[Table 1 near here]

3.2. Correlations between Study Variables

Correlations between the control variables (sex, age, marital status, participant source, educational attainment, and social desirability), predictor variables (sensation seeking,

peer influence, present and future time perspectives), and the transformed and recoded risk and reckless behavior scores are presented in Table 2. Also included is age raised to the power of two, calculated to capture possible quadratic effects (Aiken & West, 1991). Significant relationships between this and the risk and reckless behavior criteria would be consistent with the hypothesized curvilinear relations between age and the criterion behaviors. Alpha reliability coefficients are on the diagonal. Most scales had at least reasonable reliabilities (minimum $\alpha > .63$). Correlations among the risk and reckless behavior scales varied between .30 and .49. These findings support hypothesis 1, that various types of risk and reckless behavior are interrelated. Given the positive correlations between the reckless behavior scales, and in accord with past practice (e.g., Bradley & Wildman, 2002; Rolison & Scherman, 2003), a total recklessness scale was computed by aggregating scores on these three scales.

[Table 2 near here]

Sex was related to several of the psychosocial predictors and all of the criterion variables. In particular, compared to females, males reported higher sensation seeking, lower future time perspective, and, supporting hypothesis 2, higher risk and reckless behaviors. Larger sex differences were found for risk behavior ($\eta^2 = .15$) and reckless driving ($\eta^2 = .09$), than for substance use ($\eta^2 = .05$) and sexual behavior ($\eta^2 = .03$). Age was not strongly related to any of the measured variables, although the modest correlations ($r_s < .15$) with present time perspective, future time perspective and reckless substance use were significant. The positive correlation between age and future

time perspective was stronger in males ($r = .22$) than in females ($r = .06$, $z = 1.96$, $p < .05$). Although risk behaviors, substance use and total recklessness were more highly correlated with age in females ($r_s = -.14$, $-.18$ and $-.14$) than in males ($r_s = -.03$, $-.06$ and $-.01$), none of these differences was significant (all $z_s < 1.96$, *ns*). The correlation between age and anti-social peer pressure was $-.13$ in males and $.02$ in females, $z = 1.84$, *ns*.

There was a tendency for the risk and reckless behaviors to be more highly correlated with age-squared than with age, suggesting nonlinear age effects on these behaviors. One-way ANOVAs with age as the independent variable confirmed this trend with respect to total recklessness only. Thus, whilst the effect for age on total recklessness was significant, $F(11, 595) = 2.77$, $p = .002$, partial $\eta^2 = .049$, decomposition of this effect revealed a non-significant linear component ($p = .099$), with a significant deviation from linearity ($p = .002$). Figure 1 shows mean total recklessness by age. Consistent with hypothesis 3, the pattern resembles the expected inverted-U curve.

[Figure 1 near here]

Sensation seeking and anti-social peer influence were positively related to risk and reckless behaviors, consistent with hypotheses 4 and 5. Correlations for both present and future time perspective were also in the expected direction. Present time perspective was positively, and future time perspective negatively associated, with risk and reckless behaviors.

3.3. Regression Analyses Predicting Risk and Reckless Behaviors

Prior to multiple regression analyses, residual analyses were performed to confirm that the assumptions of normality, linearity, homoscedasticity and independence of residuals had been met. Examination of the residual plots and computation of Levene's test for homogeneity of variance indicated that no assumptions were violated. Using a criterion of $p < .001$ for Mahalanobis Distance, several multivariate outliers were detected among the cases in each analysis. These were individually removed and the analysis re-run. As the impact of removing each was minimal, all cases were retained. Despite the significant correlations between pairs of predictors, all tolerance values were within acceptable ranges, indicating that there were no multicollinearity problems. In all analyses, F values for the regression equation were highly significant ($p < .001$), indicating the null hypothesis that multiple R^2 equals zero should be rejected. For reasons of parsimony, these F statistics are not reported.

Separate hierarchical multiple regression analyses examined the extent to which sensation seeking, anti-social peer influence, present time perspective, and future time perspective accounted for variance in reported risk and reckless behaviors. Two-way interactions between sex and age were also investigated by entering these terms in preliminary regression analyses. None of these interactions approached significance, so they were excluded from the main analyses and are not discussed further.

The control variables sex, age, marital status, and social desirability were entered at step 1. Also included at step 1 was a variable reflecting participant source (university vs. community), because independent group t -tests revealed that the two groups differed in respect of some of the study variables: compared to the university-

based sub-sample, the community-based sub-sample reported higher levels of present time perspective ($p < .01$), sexual recklessness ($p < .01$), and total recklessness ($p < .05$).

To examine whether the criterion behaviors varied non-linearly with age, the squared age value (in centred form) was entered at step 2, followed by sensation seeking and anti-social peer influence at step 3. Future and present time perspectives were entered at step 4 to determine whether these cognitive variables explained significant amounts of incremental variance in the criterion behaviors.

To explore possible sex and/or age differences in the impact of the predictors, step 5 included four product terms representing the interaction of each of the psychosocial predictors with sex, and step 6 included the corresponding interaction terms involving age. All linear predictors were expressed in mean deviation form prior to computing product terms. (Two-way interactions between sex and age were also investigated in preliminary analyses. None of these interactions was significant, so they were deleted in the main analyses and are not discussed further). Results are presented in Table 3.

[Table 3 near here]

The predictor variables explained between 13% (reckless driving) and 29% (reckless substance use) of variance in the criterion behaviors. Between two and six of the predictors accounted for significant proportions of unique variance in each outcome. After all variables had entered the equation, sex predicted risk and all forms of reckless behavior except sexual recklessness. Compared with females, males reported more

frequent involvement in risk behavior, reckless substance use, reckless driving, and total reckless behaviors. Age predicted risk behaviors. Marital status predicted reported sexual recklessness: compared to single participants, married/de facto participants reported engaging in less sexual reckless behaviors. Participants drawn from the community were more likely to report engaging in reckless sexual behaviors than were those drawn from the universities. Social desirability was significantly and negatively associated with reported reckless driving behavior only.

Entry of the term representing the quadratic effect of age at step 2 was associated with significant increases in proportions of variance explained in reported reckless substance use and total recklessness, but not in reported risk, reckless sexual or reckless driving behaviors.

Adding sensation seeking and peer influence at step 3 of the analyses was associated with significant increases in proportions of explained variance in all criteria. Sensation seeking explained significant variance in all but reported reckless substance use and reckless driving. In the case of these criteria, sensation seeking was a significant predictor when first entered ($\beta = .19, p < .0005$, in the case of reckless substance use, and $\beta = .15, p < .0005$, in the case of reckless driving), and remained so after entry of the time perspective variables, but was rendered non-significant by the subsequent entry of the interaction terms. The Sex by Sensation Seeking interaction was significant in predicting reported reckless substance use and total reckless behavior. Simple slopes analyses revealed that sensation seeking was a stronger predictor of reported reckless substance use and of total reckless behavior in males than in females. Figures 2a-e show all significant interaction effects.

[Figures 2a-2e near here]

Antisocial peer influence predicted two types of reckless behavior and total reckless behavior, but not reported risk behaviors. Its effects were not moderated by sex or age.

Introducing present and future time perspective at step 4 yielded significant increases in explained variance in reported reckless substance use, sexual behavior, and total recklessness, but not in reported risk or reckless driving behaviors. These findings provide partial support for hypothesis 6. Present time perspective significantly and uniquely predicted reported reckless substance use and total recklessness. The former effect was moderated by sex: present time perspective was a stronger predictor of reported reckless substance use in females than in males. There was also a significant Sex by Present Time Perspective interaction on reported sexual reckless behavior, with a positive effect of present time perspective on this criterion in males but not in females. Future time perspective predicted reported reckless sexual behavior, but was not uniquely related to the other three criteria. Age and future time perspective interactively predicted reported risk behaviors – a simple slopes analysis revealing that, with increasing age, future time perspective was more strongly, and inversely related to reported risk behaviors (see Figure 2e).

4. Discussion

4.1. Overview and Evaluation of Findings

Building on past research investigating adolescent risk and reckless behavior, the current study examined correlates of risk and reckless behaviors in a sex- and age-balanced sample of emerging adults aged 18-29 years. Three types of reported behaviors – reckless driving, substance use and sexual behaviors – were inter-correlated, with correlations ranging from .32 to .49 – a similar range to that ($.32 < r < .46$) reported by Bradley and Wildman (2002). Supporting hypothesis 1, all reported reckless behavior types were associated with each other and with reported risk behaviors. The findings of positive correlations between reckless behaviors suggest that Jessor's (1992) concept of a “syndrome” of problem behaviors, first observed in adolescence, may also apply to emerging adulthood.

Consistent with previous research (Arnett, 1996; Jessor et al., 1997) and with hypothesis 2, emerging adult males reported engaging more frequently in risk and reckless behavior than did same-age females. Effect sizes were similar to those previously reported, with larger sex differences found for reported risk behaviors and reckless driving, than for substance use and sexual behavior. Compared with females, males reported higher levels of sensation seeking tendencies, lower levels of future time perspective, and, to a lesser extent, higher levels of anti-social peer pressure and present time perspective. All four of the interactions on reported reckless behaviors were with sex, indicating that the effects of several of the predictors on reckless behaviors were

moderated by sex, but in no case were they moderated by age. Thus, sex appeared to have a stronger moderating effect on emerging adult recklessness than did age.

The finding that antisocial peer pressure was not significantly associated with age is also interesting in the light of Arnett's (2000) theorizing about emerging adulthood. According to Arnett, in contemporary western societies the emerging adult years are characterized more by exploration than by commitment. Much of this exploration occurs in peer contexts, and although not all emerging adults are exposed to antisocial peer influence, our findings suggest that the impact of these influences on those exposed to them remains relatively constant throughout these years. Future research could usefully investigate antecedents to antisocial peer influences, as well as the role played by such major life events as marriage, parenthood, or death of a parent in rescinding these influences.

Past research is inconclusive about how risk and reckless behaviors change during emerging adulthood. Age-related effects in the current study were not strong, with the bivariate analyses showing that the association in respect of reported risk and reckless behaviors was significant in the case of reported substance use only. Greater age was associated with higher values of future time perspective and with lower values of present time perspective. These associations are consistent with, and perhaps help to explain, the age-related differences in reported reckless substance use. Notwithstanding this, the generally small age-related differences are consistent with Arnett's (2000) view of the years 18-29 as representing a coherent stage of life, during which there is considerable variability between individuals, but only modest levels of whole cohort developmental change.

Hypothesis 3 predicted a non-linear (inverted-U) relationship between age and the criterion behaviors. This prediction was most clearly supported in relation to total recklessness, with additional evidence of a quadratic association between age and reported reckless substance use. Most past research (e.g., Bachman et al., 1997; Martin & White 2005) that has found similar non-linear trends has investigated age-effects on alcohol and other substance use (rather than on risk, sexual or driving behaviors). While this study found an overall non-linear trend for the reported behaviors, our findings suggest that the previously-observed effect does not hold for these other risk and reckless behaviors.

Consistent with the literature and hypothesis 4, sensation seeking predicted reported risk and reckless behaviors, and was the most powerful predictor of three of the criterion behaviors – remaining significant in the case of two of them after further predictors entered the regression equations. The effects of sensation seeking on reported substance use (and total recklessness) were moderated by sex, with stronger effects in males than in females. To the authors' knowledge such an effect has not been previously shown, and requires replication. If replicated, it suggests that different motives may underlie substance use in emerging adult males and females, with males driven more by the prospect of new and/or intense sensations.

In accord with hypothesis 5, and prior research (e.g., Bradley & Wildman, 2002; Teese & Bradley, 2008), after controlling for theoretically less important variables, peer influence significantly predicted emerging adults' reported reckless behaviors, but not their reported risk behaviors. Extensive literature (e.g., Farrell & White, 1998) links anti-social peer influence with reckless behaviors in adolescents. Our study provides fresh evidence that this relationship holds into emerging adulthood. Most of the limited

past research demonstrating peer effects on emerging adults' reckless behavior has focused on alcohol and other substances, so the current findings can be viewed as extending knowledge of these effects to other types of reckless behaviors.

Findings were mixed in relation to hypothesis 6. Future time perspective, but not present time perspective, predicted reported reckless sexual behavior, and present, but not future, time perspective predicted total recklessness. These findings may be understood in terms of Reyna's (Reyna & Adams, 2003; Reyna & Farley, 2006) work on fuzzy trace theory. For Reyna and colleagues, decisions to take risks are often based on imprecise, impressionistic or *gist*-based representations of relevant information. Thus, for example, information available to males contemplating sexual recklessness may be represented in terms of certain, immediate gain, whereas, for females, the gist of the same information may relate to harm or danger. However, while present time perspective had no main effect, it did have a significant interaction with sex, on reported sexual recklessness. Present time perspective was positively associated with reported sexual recklessness in males and negatively associated with reported sexual recklessness in females – a finding consistent with the view that, males' sexual recklessness, more so than that of females, is driven by immediate pleasure-seeking.

Whilst both time perspective variables were related to reported reckless substance use, the effect of present time perspective was qualified by an interaction with sex. Specifically, present time perspective had a stronger effect on reported substance use in females than in males. Findings in relation to substance use further support the possibility of sex differences in motives underlying recklessness. The data suggested that, compared with males, emerging adult females' substance use is more highly influenced by the prospect of immediate reinforcement contingencies (high present time

perspective). However, bearing in mind the previously reported sex differences in the impact of sensation seeking, it seems that females are not more highly motivated than are males by the intrinsic sensation of the substance itself. Perhaps females' motives for reckless substance use relate more to coping with negative emotions than to striving for hedonistic pleasure – a proposition supported by Simons, Correia, Carey, and Borsari's (1998) finding that coping motives are a better predictor of marijuana use (but not alcohol use) in females than in males.

The deterrent effect of future time perspective on reported risk behaviors was associated with greater age. Otherwise the time perspective variables contributed little that was unique to explaining reported risk behaviors.

In sum, all non-demographic variables, either as main or interaction effects, predicted reported reckless sexual behavior, three (sensation seeking, peer influence and present time perspective) predicted reported reckless substance use and total recklessness, and two (sensation seeking and future time perspective) predicted reported risk behaviors. These four psychosocial predictors thus played a useful role in understanding variability in at least some of the criterion behaviors. Our model accounted for more variance in reported reckless substance use, total recklessness and reported risk behaviors than it did in reported reckless sexual behavior, while reported reckless driving was not uniquely predicted by any of the psychosocial variables.

4.2. Implications

Our findings suggest that the four psychosocial variables studied could be used in campaigns targeting some instances of recklessness, since all may be amenable to

change. Zimbardo and Boyd (1999) argued that, because many individuals lack the cognitive scaffolding on which to hang possible negative future consequences of their current behavior, interventions are required to teach young people the “language” of future time perspective. Psycho-educational programs might, for example, aim to encourage emerging adults to channel their sensation seeking tendencies in socially approved directions such as organised sports. Interventions aimed at reducing the impact of peer pressure have been applied successfully to adolescents (e.g., Wassef, Collins, Ingham, & Mason, 1995) and these may be adapted for use with emerging adults.

Our findings of sex differences in the link between sensation seeking and reported substance use suggest that interventions of this kind may have a greater impact on males' than on females' substance use. Strategies that build social skills (e.g., awareness of peer influence, and how to resist peers' exhortations to engage in anti-social behaviors) could be beneficial in ameliorating all three forms of reckless behaviors. Interventions involving instruction in the benefits of a future time perspective (e.g., education about long-term effects of reckless behaviors, assistance in future planning) might contribute to mitigating reckless substance use and sexual behavior. Greater awareness of educational and vocational opportunities, and encouragement of educational and occupational goal setting, may also help emerging adults acquire a future orientation (Nurmi, 1991).

4.3. Strengths and Limitations

4.3.1. Strengths

This study extended previous research on emerging adult risk and reckless behaviors (e.g., Bradley & Wildman, 2002) by incorporating cognitive variables – present and future time perspective – into a psychosocial predictive model, and extended the age range sampled up to 29 years. This may be the first study to test a model of psychosocial correlates of reported risk and reckless behaviors in a sample spanning the full emerging adult period. The moderately large sample included a high proportion of non-students, thereby permitting greater generalizability than studies using exclusively student samples. Males and females in all age cohorts were recruited in approximately equal numbers.

The study distinguished risk behavior from three kinds of reckless behaviors, which allowed investigation of differential impacts of predictor variables on different behavior types reported. An attempt was made to use psychometrically-sound, previously validated scales. Social desirability and demographic variables were statistically controlled, and interaction effects involving sex and age assessed.

4.3.2. Limitations

The cross-sectional design meant that no causal inferences could be drawn. Despite attempting to control for socially desirable responses, response biases could have affected measurement. Self-report measures were used throughout, thereby increasing the likelihood of response biases and inflated associations between variables due to common method variance. Whilst acknowledging this as a potential weakness of the

study, direct observation is not a valid alternative to self-reports when investigating the frequency of reckless behaviors. Indeed, there is some evidence (e.g., Johnston, 1985) that self-reports provide reliable and valid information regarding reckless behaviors. Furthermore, we emphasized anonymity and the importance of honesty when instructing participants, and, unlike most past research (e.g., Arnett, 1996; Rolison & Scherman, 2003), we measured and controlled for social desirability biases..

The reliability of the AISS and the RRBQ were disappointing, and some questionnaire items were problematic. For example, in responding to the driving speeding item in the RRBQ, respondents may have variously reported the number of times they increased driving speed beyond the signed limit, the number of trips on which this occurred, or the number of days on which this happened. Items such as this require clarification prior to further use of this scale.

While the reliability coefficient obtained for the Arnett sensation seeking scale ($\alpha = .63$) was identical to that obtained by Bradley and Wildman (2002), the reliability of the peer pressure scale ($\alpha = .66$) was lower than that obtained by Bradley and Wildman ($\alpha = .76$). Reliabilities of some of the measures used in the current study would have attenuated the reported correlations, which in turn would have affected the hierarchical evaluation of the product terms. Future research should use more reliable measures, such that the main and interaction effects of the predictors are not underestimated.

4.4. Suggestions for Future Research

Despite its limitations, this study provided evidence for some underlying mechanisms of emerging adults' risk-taking and recklessness that merit further attention. Future

research could benefit from longitudinal study over the duration of emerging adulthood, facilitating clearer evaluation of temporal relations between predictors and criterion behaviors and perhaps allowing some causal inferences to be drawn. Additional predictors may need to be included in the model, especially to account for larger proportions of the variance in driving and sexual recklessness. Research could also usefully examine why future and present time perspectives explain significant unique variance in some reported reckless behaviors (e.g., substance use) but not others (e.g., driving).

Our finding of significant differences between the university- and community-sourced sub-samples in reported sexual recklessness and total recklessness underscores the contribution of the current study relative to past research that has relied exclusively on college-sourced samples. Benefits of using samples that extend the homogeneity typically found in samples that are exclusively based upon higher education students should be evident from some of the findings of this study, and we would therefore encourage analysis of more heterogeneous samples in future studies.

Given evidence from the current study of limited associations between reported levels of reckless behaviors and greater age (especially in relation to reported reckless driving and sexual behaviors), future research could extend the age group sampled (e.g., to 17-35 years) to determine when levels of these activities might start to decline. While many variables might contribute to the expression of risk and reckless behaviors, our prime aim in this study was to identify and operationalize those that had been shown to be primarily of psychological interest, while controlling for well-established age and sex effects. Demographic variables that were not included in this study, partly to reduce respondent burden and concerns about possible identification (pilot testing

suggested that both of these factors represented potential threats to participation) included ethnicity, socio-economic and employment status, and parental status. Compared with levels of reported recklessness in our sample, recklessness might for example be expected to be lower among those who are in full-time employment and who are parents. Where research has indicated that these factors could be significant predictors of reported reckless behaviors it might be worthwhile for future research to investigate these variables using appropriate study samples. Improvements in, or replacement of, some of the measures also seems warranted.

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Table 1

Data Ranges, Means, and Coefficient Alphas

| Scale | Possible range | Observed range | Mean (SD) | Alpha |
|--------------------------------------|-------------------|-------------------|---------------|-------|
| Marlow-Crowne SDS | 13-52 | 21-48 | 35.00 (4.00) | .55 |
| Arnett Sensation Seeking Index | 20-80 | 33-74 | 54.00 (7.00) | .63 |
| EAPPI | 8-40 | 11-40 | 24.00 (4.00) | .65 |
| Time Perspective Inventory – Present | 24-120 | 41-120 | 76.00 (12.00) | .85 |
| Time Perspective Inventory – Future | 16-65 | 21-64 | 43.00 (7.00) | .79 |
| Reckless Substance Use* | 0-60 | 0-56 | 16.40 (11.80) | .77 |
| Reckless Sexual Behaviors* | 0-60 | 0-51 | 12.43 (10.52) | .87 |
| Reckless Driving* | 0-60 | 0-57 | 6.56 (8.36) | .78 |
| Risk Behaviors* | 0-60 | 0-45 | 6.72 (8.37) | .63 |

* Transformed scales

Table 2

Study Correlations^a and Reliability Coefficients^b

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|-------|-------|-------|-------|
| 1. Sex ^c | - | | | | | | | | | | | | | | |
| 2. Age | -.02 | - | | | | | | | | | | | | | |
| 3. Age-squared | -.10* | .16** | - | | | | | | | | | | | | |
| 4. Marital Status ^d | -.18** | .52** | -.26** | - | | | | | | | | | | | |
| 5. Educational Attainment | .01 | .35** | -.07 | .11** | - | | | | | | | | | | |
| 6. Participant Source ^e | .09* | .26** | -.22** | .22** | .30** | - | | | | | | | | | |
| 7. Social Desirability | -.06 | .05 | -.03 | -.03 | .04 | -.01 | .65 | | | | | | | | |
| 8. Sensation Seeking | .47** | -.03 | -.07 | -.24** | -.00 | .04 | -.08 | .63 | | | | | | | |
| 9. Peer Influence | .10* | -.06 | .00 | -.21** | -.06 | -.06 | -.19** | .27** | .66 | | | | | | |
| 10. Present Time Perspective | .11** | -.09* | .01 | -.12** | -.11** | .14** | -.18** | .36** | .29** | .85 | | | | | |
| 11. Future Time Perspective | -.22** | .14** | -.02 | .17** | .19** | -.06 | .20** | -.25** | -.33** | -.35** | .79 | | | | |
| 12. Risk Behaviors ^f | .48** | -.07 | -.08 | -.30** | -.02 | .09* | .01 | .37** | .14** | .16** | -.13** | .63 | | | |
| 13. Reckless Substance Use ^f | .28** | -.11** | -.12** | -.10* | -.18** | .08 | -.11** | .36** | .40** | .33** | -.32** | .37** | .77 | | |
| 14. Reckless Sex ^f | .21** | -.03 | -.09* | -.11* | -.04 | .13** | -.10* | .29** | .27** | .24** | -.24** | .30** | .49** | .87 | |
| 15. Reckless Driving ^f | .37** | -.05 | -.09* | .00 | .01 | .03 | -.13** | .27** | .18** | .12** | -.11** | .34** | .38** | .32** | .78 |
| 16. Total Recklessness ^f | .37** | -.07 | -.15** | .00 | -.04 | .12** | -.14** | .37** | .30** | .27** | -.23** | .41** | .74** | .57** | .80** |

^a Correlations involving sex, marital status and participant source are point biserial; those involving education are Spearman; others are Pearson. ^b Alpha reliability coefficients are given in italics on the diagonal, where relevant. ^c Sex was coded 0 = female, 1 = male. ^d Marital status was coded 0 = single, 1 = married or de facto. ^e Participant source was 0 = university, 1 = community. ^f Correlations based on transformed, recoded variables.

Table 3

Hierarchical Multiple Regression Predicting Reported Risk Behaviors, Three Types of Recklessness, and Total Recklessness

| Step & Predictors | Risk Behaviors | | | Substance Use | | | Sexual Behavior | | | Driving | | | Total Recklessness | | |
|---------------------------------|----------------|-------------|---------|---------------|-------------|---------|-----------------|-------------|---------|----------|-------------|---------|--------------------|-------------|---------|
| | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β |
| 1. Sex ^a | .48 | .06 | .29*** | .18 | .06 | .11** | .07 | .05 | .06 | .37 | .07 | .23*** | .26 | .06 | .18*** |
| Age | -.02 | .01 | -.08* | -.02 | .01 | -.07 | .00 | .01 | -.00 | -.01 | .01 | -.04 | -.01 | .01 | -.05 |
| Marital Status ^b | -.03 | .08 | -.02 | .08 | .07 | .04 | -.18 | .06 | -.11** | .10 | .08 | .05 | .12 | .07 | .07 |
| Participant Source ^c | .09 | .06 | .06 | .06 | .06 | .04 | .13 | .05 | .10* | .02 | .06 | .01 | .09 | .05 | .06 |
| Social Desirability | .01 | .01 | .05 | .00 | .01 | .01 | -.00 | .01 | -.00 | -.01 | .01 | -.09* | -.01 | .01 | -.06 |
| Change in R^2 | | | .16*** | | | .08*** | | | .07*** | | | .10*** | | | .11*** |
| 2. Age-squared | -.00 | .00 | -.02 | -.01 | .00 | -.08* | -.00 | .00 | -.06 | -.00 | .00 | -.06 | -.01 | .00 | -.10** |
| Change in R^2 | | | .00 | | | .01* | | | .01 | | | .00 | | | .01** |
| 3. Sensation Seeking (SS) | .03 | .01 | .23*** | .01 | .01 | .04 | .02 | .01 | .16* | .01 | .01 | .06 | .01 | .01 | .10 |
| Peer Influence | .01 | .01 | .03 | .05 | .01 | .27*** | .02 | .01 | .14* | .01 | .01 | .05 | .03 | .01 | .16** |
| Change in R^2 | | | .06*** | | | .18*** | | | .09*** | | | .04*** | | | .11*** |
| 4. Present Time | .00 | .00 | .03 | .02 | .00 | .23*** | -.01 | .00 | -.08 | -.00 | .00 | -.02 | .01 | .00 | .12* |
| Future Time | -.01 | .01 | -.06 | -.01 | .01 | -.10 | -.02 | .01 | -.17** | -.00 | .01 | -.02 | -.01 | .01 | -.09 |
| Change in R^2 | | | .00 | | | .03*** | | | .02** | | | .00 | | | .01* |

Table 3 (continued)

| Step & Predictors | Risk Behaviors | | | Substance Use | | | Sexual Behavior | | | Driving | | | Total Recklessness | | |
|---------------------|----------------|-------------|-----------|---------------|-------------|-----------|-----------------|-------------|-----------|----------|-------------|-----------|--------------------|-------------|-----------|
| | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β | <i>B</i> | <i>SE B</i> | β |
| 5. Sex x SS | .00 | .01 | .00 | .03 | .01 | .17** | -.00 | .01 | -.01 | .02 | .01 | .11 | .02 | .01 | .12* |
| Sex x Peer Pressure | .01 | .02 | .05 | .00 | .02 | -.00 | .01 | .01 | .05 | .02 | .02 | .08 | .01 | .01 | .04 |
| Sex x Present Time | .00 | .01 | -.00 | -.01 | .01 | -.12* | .02 | .01 | .20** | .00 | .01 | .02 | -.00 | .01 | -.04 |
| Sex x Future Time | .02 | .01 | .10 | -.01 | .01 | -.04 | .01 | .01 | .10 | .01 | .01 | .04 | .01 | .01 | .05 |
| Change in R^2 | | | .01 | | | .01* | | | .02* | | | .01 | | | .01 |
| 6. Age x SS | .00 | .00 | -.01 | .00 | .00 | .05 | .00 | .00 | .02 | -.00 | .00 | -.00 | .00 | .00 | .02 |
| Age x Peer Pressure | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .00 | .05 | .00 | .00 | .05 | .00 | .00 | .04 |
| Age x Present Time | -.00 | .00 | -.04 | -.00 | .00 | -.03 | -.00 | .00 | -.05 | -.00 | .00 | -.04 | .00 | .00 | -.01 |
| Age x Future Time | -.00 | .00 | -.08* | -.00 | .00 | -.07 | .00 | .00 | -.01 | .00 | .00 | .03 | .00 | .00 | .02 |
| Change in R^2 | | | .00 | | | .01 | | | .00 | | | .00 | | | .00 |
| R^2 (Adj R^2) | | | .24 (.21) | | | .31 (.29) | | | .20 (.17) | | | .16 (.13) | | | .26 (.23) |

Note. The table shows the final model. Contact the authors for details of the full hierarchical procedures.

^a Coded as 0 = female, 1 = male. ^b Coded as 0 = single, 1 = married or de facto. ^c Coded as 0 = university, 1 = community.

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

Figure Captions

Figure 1. Total recklessness as a function of age

Figure 2a. Effects of sex and sensation-seeking on reported substance use

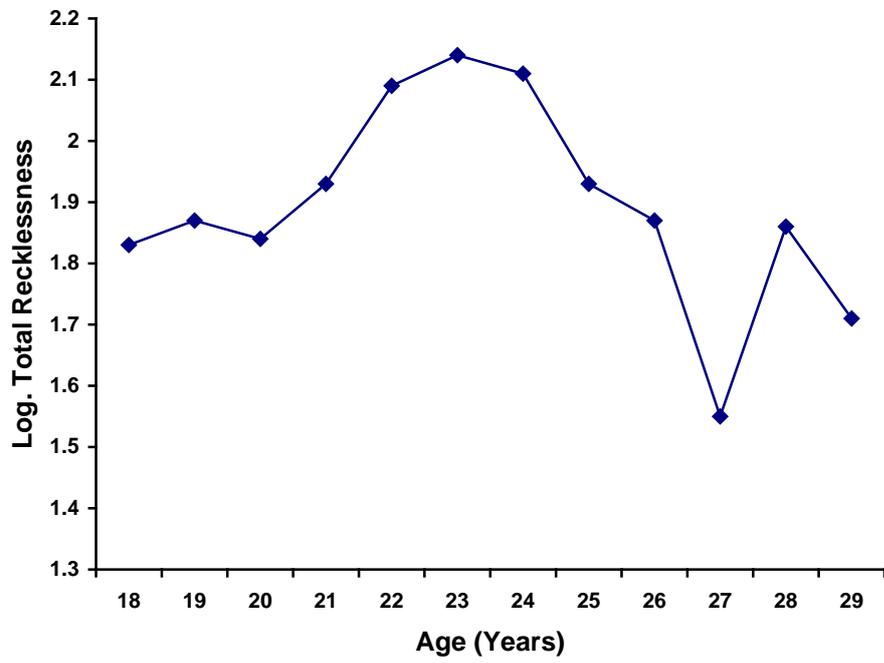
Figure 2b. Effects of sex and sensation-seeking on total recklessness

Figure 2c. Effects of sex and present time perspective on reported reckless substance use

Figure 2d. Effects of sex and present time perspective on reported reckless sexual behavior

Figure 2e. Effects of age and future time perspective on reported risk behaviors

Figure 1



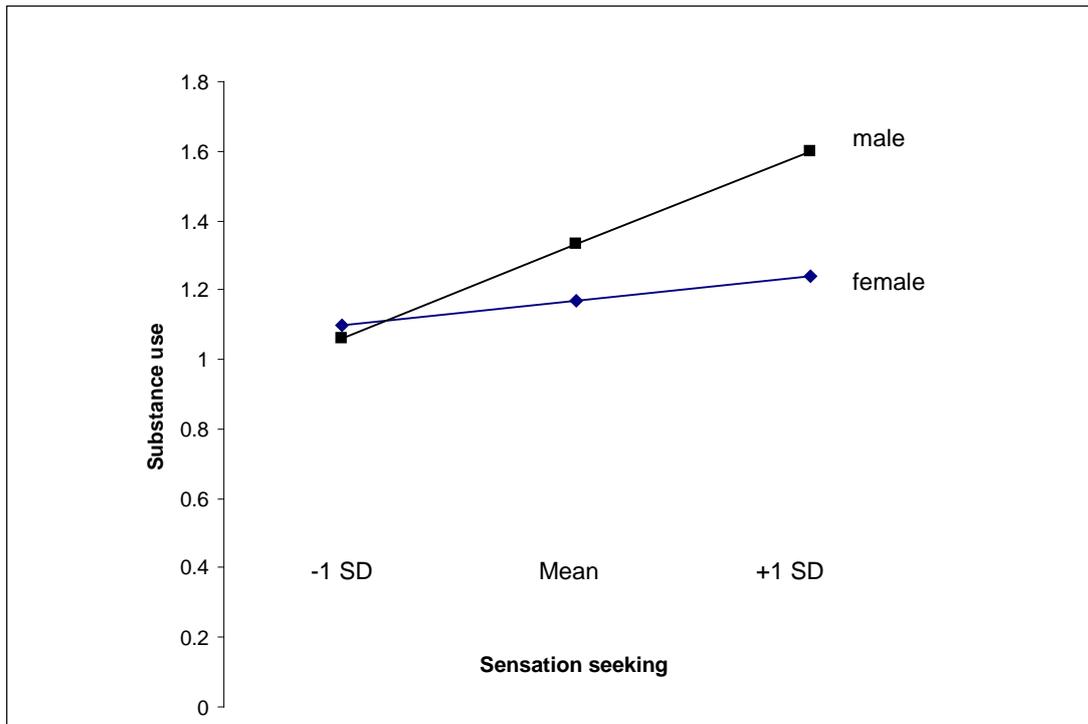


Figure 2a.

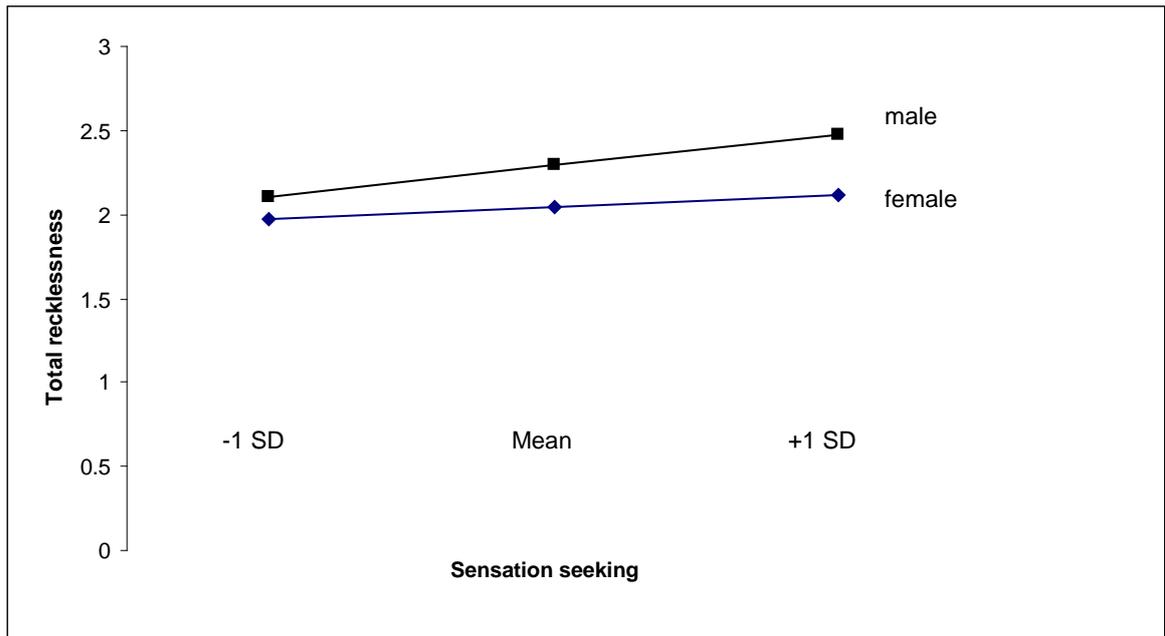


Figure 2b.

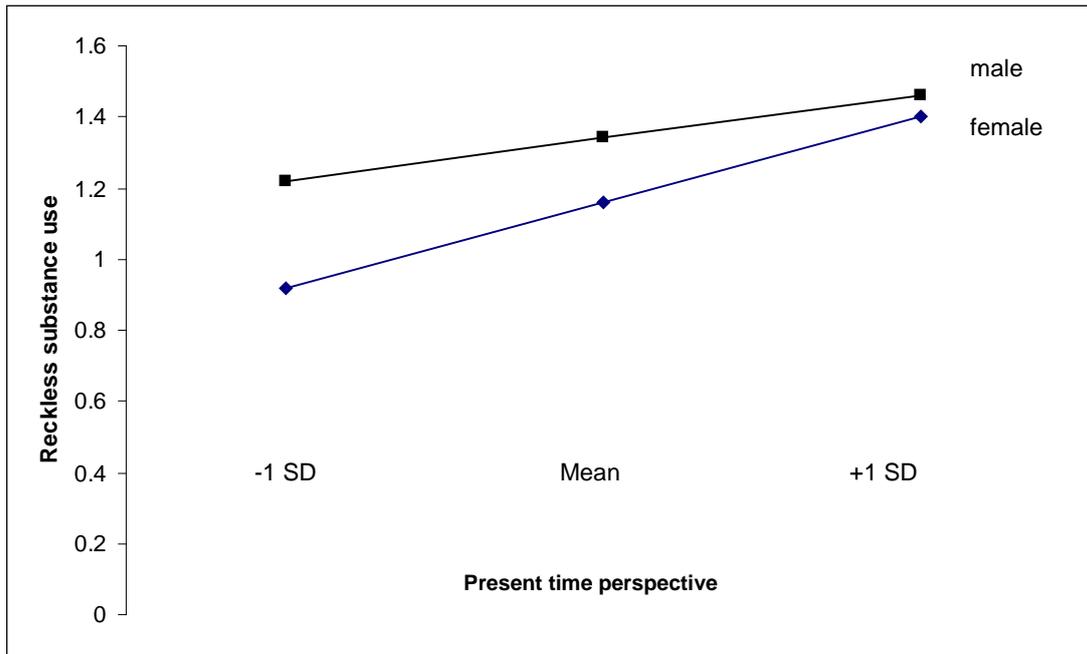


Figure 2c.

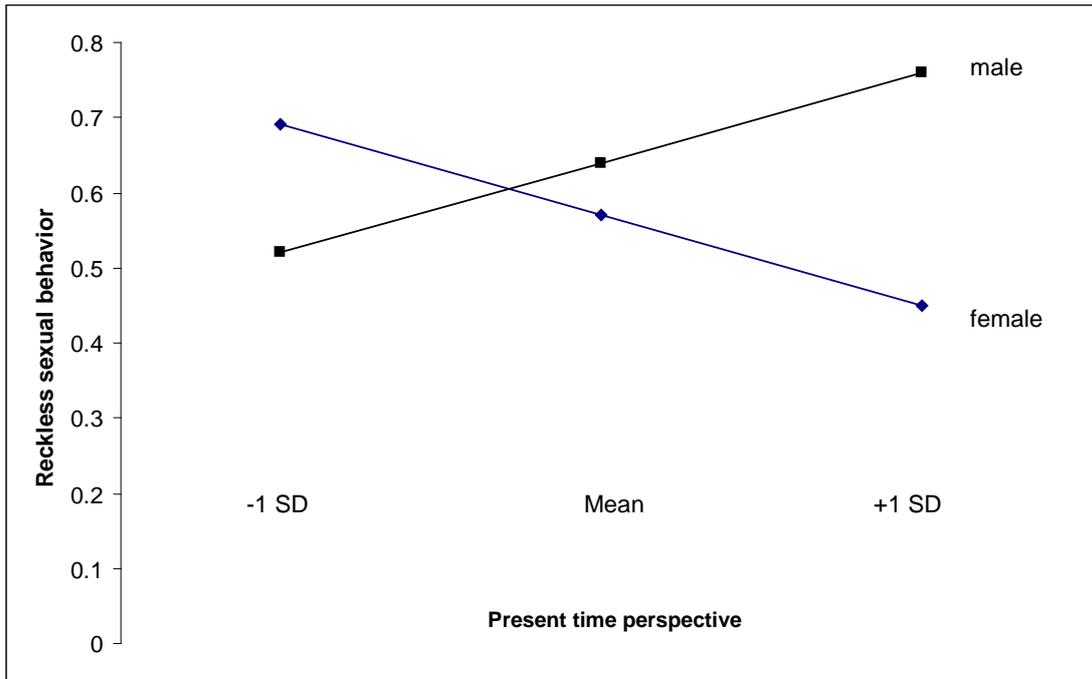


Figure 2d.

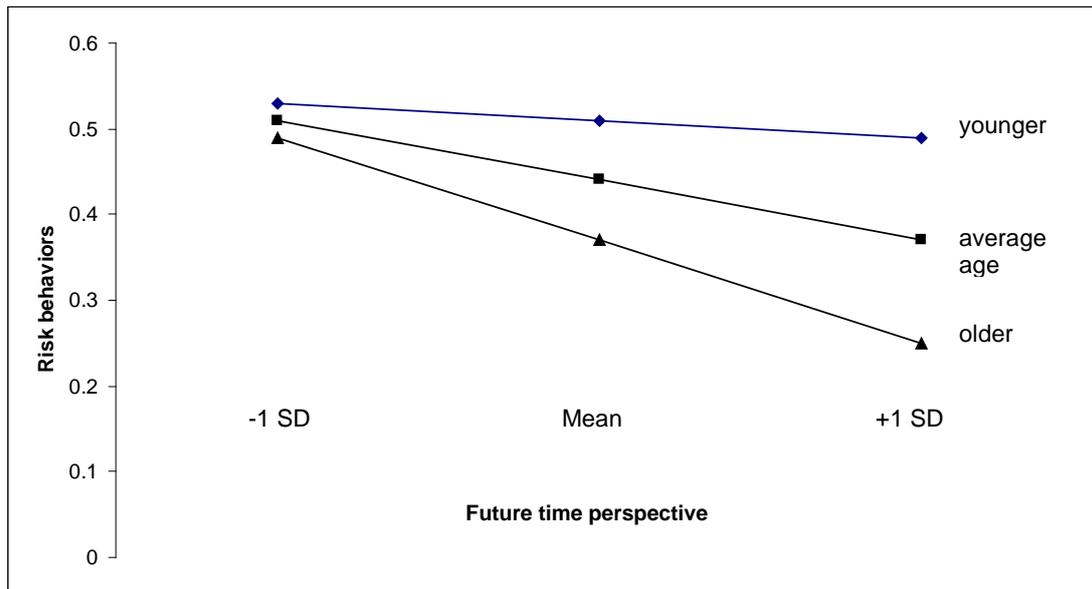


Figure 2e.

Note. Age categories represent one standard deviation below the sample mean (19.9 years), the sample mean (23.4 years) and one standard deviation above the sample mean (26.9 years)