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Self-Perceived Emerging Adult Status and Substance Use

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Abstract

Very little research exists on how self-perceived emerging adult status is associated with substance use among low-income emerging adults. The Inventory of Dimensions of Emerging Adulthood (IDEA) was administered to emerging adults (EAs) ages 18–25 screened for substance use problems ($n=105$) in a state-subsidized, not-for-profit treatment agency. We examined whether the defining dimensions of Arnett's (2000a) emerging adulthood theory were associated with substance use frequency and substance-related problems, including: identity exploration, self-focus, possibilities, optimism, negativity/instability, and feeling in-between. In multivariate models, feeling in-between was positively associated with substance-related problems. An interaction term between minority status and feeling in-between approached statistical significance ($p = .057$). Further, IDEA scale score means were comparable to those found in college student samples. Implications for theory revision are discussed.

Keywords

Drug Abuse; Alcohol Abuse; Emerging Adulthood; Developmental Psychology

Introduction

Emerging adulthood (EA; ages 18–25) was proposed as a unique developmental stage within the human life course (Arnett, 2000a). Among its distinct characteristics, emerging adults (EAs) have higher rates of current illicit drug use (21.5%) when compared to adolescents (10.1%) and adults aged 26 or older (6.6%) (Substance Abuse and Mental Health Services Administration, 2011). Mounting evidence also suggests that EAs have worse substance use treatment outcomes compared to both adolescents and older adults (Rossman, Roman, Zweig, Rempel, & Lindquist, 2011; Satre, Mertens, Arean, & Weisner, 2003; Satre, Mertens, Arean, & Weisner, 2004; Smith, Godley, Godley, & Dennis, 2011). It would be an advance if researchers could pinpoint aspects of development associated with substance use that may moderate the relationship between age and substance use treatment outcomes.

Arnett's (2000a) theory of emerging adulthood (EA) is well known, and specific hypotheses exist about how the proposed developmental aspects of EA are associated with substance

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use (Arnett, 2005). For example, Arnett (2005) argues that identity exploration is now more relevant in emerging adulthood versus adolescence, and that increased identity exploration in emerging adulthood may account for the higher prevalence of substance use by EAs. There is, however, limited empirical support for Arnett's (2005) hypotheses on how the five proposed dimensions of emerging adulthood described below are associated with substance use among EAs. Lisha et al. (in press) found that two dimensions of EA, optimism and self-focus, were associated with past 30 day alcohol use and marijuana use among adolescents (mean age = 16.8). We are unaware of any studies that have specifically tested all of Arnett's (2005) hypotheses in an EA sample. Understanding whether developmental aspects of EA are associated with substance use may inform the research community about whether such constructs should be considered as moderators of substance use treatment outcomes in future studies. Finally, some critiques suggest that the EA theory only generalizes to middle class youth (Hendry & Kloep, 2007, 2010, 2011). A secondary aim here was to address these critiques by sampling disadvantaged emerging adults seen in a private, not-for profit substance use treatment agency.

Dimensions of Emerging Adulthood (EA) and Substance Use

Due to the delayed onset of traditional adult roles, Arnett (2000a) conceptualized the new life stage of emerging adulthood (EA), suggesting that EAs are different from both adolescents and adults due to their increased *identity explorations*, *self-focus*, *instability*, and *optimism*, as well as their sense of *feeling in-between* adolescence and adulthood. Below we review Arnett's (2005) hypotheses on why these dimensions should be associated with substance use, and the current empirical support for each hypothesis.

For over 60 years, *identity exploration* has been considered a key activity in adolescence (Erikson, 1959). For emerging adults, two studies support the neo-Eriksonian identity status paradigm (Marcia, 1966), which posits that prior exploration followed by commitment to an identity (i.e., identity achievement) is associated with less substance use (Bishop et al., 2005; Schwartz et al., 2011). Furthermore, both these studies were completed with college students. According to Arnett (2005), active identity exploration is expected to be positively associated with substance use, but studies with emerging adult samples are lacking. Emerging adults (EAs) also have more leisure time relative to other age groups, giving them ample time for *self-focus*. Because of this, Arnett (2000a) claims that emerging adulthood has supplanted adolescence as the period for identity development. That is, greater separation from parents and relatively weak commitments to romantic partners and jobs allow EAs to explore their individuality. In fact, college attendance is conceptualized as a period of institutionalized moratorium (Cote, 2006), or protected time where society allows advantaged EAs, to go "find themselves." As *self-focus* results from weak commitments to others (e. g. fewer parental controls or workplace norms) and loosening of social controls, it is hypothesized to be positively associated with substance use (Arnett, 2005). Indirect evidence supports this hypothesis in that role transitions that reduce self-focus (e.g., parenthood) are associated with reduced substance use (Bogart, Collins, Ellickson, Klein, & Martino, 2005; Gotham, Sher, & Wood, 1997; Kandel & Raveis, 1989; Leonard & Rothbard, 1999). To our knowledge, no study has directly tested whether EAs' perceived self-focus is associated with substance using behavior.

Multiple transitions in housing, relationships, and jobs for EAs led Arnett (2000a) to label emerging adulthood (EA) as the age of *instability*. Arnett (2005) hypothesized that *instability* would have a direct positive effect on substance use. Longitudinal studies have found that housing transitions (i.e., moving away) during the beginning of EA are associated with increased drinking (White & Jackson, 2004–2005; White et al., 2006). However, Schulenberg and colleagues (2010) found that EAs with the most transitions between ages 18–19 had the lowest substance use at subsequent waves through age twenty-four. The most common transition measured in that nationally representative study was clearly associated with upward social mobility (e.g., leaving for college). Thus, this study extends prior research findings by using a measure of self-perceived instability and also testing this hypothesis in a sample of lower income EAs.

Arnett (2000a) argued that emerging adults are more optimistic than individuals in other life stages, seeing more *possibilities* for their futures compared to older adults. In one study, older individuals were indeed found to perceive fewer possibilities compared to EAs (Reifman et al., 2007). Arnett (2005) reasoned that because emerging adults are *optimistic* they may see substance use as something of little consequence. The association between optimism and substance use was proposed to be curvilinear, with higher use at both high and lower levels of optimism. There is limited evidence for this hypothesis, with only one study finding a positive association between optimistic biases and drug use for college students (Lapsey and Hill, 2010).

Arnett's (2000a) *feeling in-between* construct refers to findings that most EAs do not perceive themselves to be full-fledged adults. Several studies find that when 18–25 year olds respond to an item about whether they are truly adults, the modal reply is “in some ways yes, and in some ways no” (Arnett, 2000b; Arnett, 2001; Arnett, 2003; Arnett & Taber, 1994; Arnett, 1997). Those EAs that are *feeling in-between* adolescence and adulthood are expected to use substances more frequently, as they are thought to view drug and alcohol use as something they will set aside later (Arnett, 2005). One study with college students found that feeling in-between was positively associated with substance use (Nelson & Barry, 2005). Additionally, a qualitative study found that college students cited the inability to use substances in adulthood as a reason (15%) for current excessive use (Ravert, 2009). However, Winograd, Littlefield & Sher (2012) found no differences in self-perceived maturity between emerging adults (i.e., age 25) with or without alcohol dependence. Finally, minorities have previously been found to report feeling more like adults compared to non-Hispanic Caucasians (Johnson, Berg, and Sirotzki, 2007). Thus, it is possible that the associations between feeling in-between, substance use, and substance-related problems may be moderated by minority status.

Summary and Hypotheses

No studies have examined the associations between Arnett's (2000a) emerging adulthood (EA) theory constructs and substance use among low-income emerging adults. This is an important step in understanding whether such constructs are good candidate moderators for treatment outcome studies. We hypothesize that all five EA constructs (i.e., identity development, optimism, instability, self-focus, feeling-in-between) will be positively

associated with substance use and substance-related problems. Additionally, we hypothesize that minority status may moderate associations between feeling in-between, substance use, and substance-related problems. Finally, a secondary and exploratory aim is to see whether lower income EAs score similarly on emerging adult scales when compared to college students. We expect that the EAs in this low-income sample will report lower scores for identity development, optimism, self-focus, and feeling-in-between. However, we hypothesize that participants will be comparable or higher on instability and other-focus.

Method

Procedure and Participants

IRB approval was obtained at the lead author's institution. Data were from a study on the feasibility of developing a peer-enhanced substance use disorder treatment for EAs (Smith, Cleeland, Middleton, & Godley, 2013). Participants completed a substance misuse screening at a not-for-profit outpatient agency and then nominated peers to participate. Peers and participants (i.e., identified clients) completed separate interviews. Upon completion of the study, participants received treatment as usual at the agency. They received \$40 in base compensation and an additional \$10 for timely completion of interviews. Between April, 2009 and November, 2010, 269 EAs were screened, with 107 meeting inclusion criteria for this study. We recruited 64 identified clients (59.8% of eligible) and 43 of their peers. One dyad was dropped from the analysis for completing the study twice. Thus, the final analysis sample consisted of 63 participants and 42 peers ($n=105$). Similar proportions of identified clients and peers met diagnostic criteria for lifetime alcohol dependence (e.g., 19% of identified clients and 14.3% of peers) and marijuana dependence (e.g., 23.8% of identified clients and 21.4% of peers). Additional details on screening, reasons for non-participation, and the larger study are reported elsewhere (Smith et al., 2013). On average, participants were 21.07 years old ($SD = 2.8$), were mostly male (61%), and reported a past 90 day income (from legitimate sources) of \$2,657 U.S. Dollars ($SD = 2807.4$). Only 3% reported currently being in school. Over one-third of participants (36.2%) had children, and 34.3% were receiving public assistance. Regarding racial background, 53.3% were Caucasian, 45.7% of the participants were African-American, 10.4% were Native American, and 4.7% were Hispanic, (participants could endorse multiple races). On average, participants first used drugs or got drunk when they were 13.8 years old ($SD = 2.7$), reported binge drinking on 10.1 ($SD = 17.8$) days out of the past 90 days, and were abstinent on 51.3 ($SD = 34.8$) of these days. Regarding substance use disorders, 47.6% met criteria for both lifetime abuse and dependence, 1.9% met criteria for only lifetime dependence, 9.5% met criteria for only lifetime abuse, and 41% did not meet the criteria for a lifetime substance use disorder.

Measures

The Inventory of Dimensions of Emerging Adulthood (IDEA): The *IDEA* (Reifman et al., 2007) is a 31 item scale asking individuals their level of agreement ($1 = strongly disagree$; $4 = strongly agree$) with statements about their lives. It has six subscales, including: *identity exploration* (7 items, range = 7–28, $\alpha = .64$, e.g. ...a time of finding out who you are?), *experimentation/possibilities* (5 items, range = 5–20, $\alpha = .64$, e.g. ...a time of trying out new things?), *negativity/instability* (7 items, range = 4–28, $\alpha = .72$, e. g. ...a

time of unpredictability?), *other-focus* (3 items, range = 3–12, $\alpha = .59$, e. g. ...commitments to others?), *self-focus* (6 items, range = 6–24, $\alpha = .49$, e.g. ...time of focusing on yourself), and *feeling in-between* (3 items, range = 3–12, $\alpha = .53$, e.g. ...feeling adult in some ways but not in others?). Higher scores indicate more of a given construct. Reifman et al (2007) reported higher internal consistency estimates than found here (i.e., identity exploration $\alpha = .85$, experimentation/possibilities $\alpha = .83$, negativity/instability $\alpha = .82$, other-focus $\alpha = .73$, self-focus $\alpha = .70$, and feeling in-between $\alpha = .80$), as well as evidence for test-retest reliability and construct validity.

Substance use measures: We administered the Substance Frequency Scale (SFS) and the Substance Problem Scale (SPS) from the Global Appraisal of Individual Needs (GAIN; Dennis, Titus, White, Unsicker, & Hodgkins, 2003), a widely used (Dennis, White, & Ives, 2009) reliable and valid biopsychosocial assessment with a well-specified training certification process (Titus, Smith, Dennis, Ives, Twanow, & White, 2012). The *SFS* ($\alpha = .76$) measures the average percent of days (out of the past 90) of self-reported substance use, heavy substance use, multiple-substance use, and days of problems from use. The scale ranges from 0–1, with higher scores indicating a higher percent of days of use and problems resulting from use. It has good concordance with timeline follow-back reports (Dennis, Funk, Godley, Godley, & Waldron, 2004) and urine testing procedures (Buchan, Dennis, Tims, & Diamond, 2002) and discriminates between youth at different levels of care (Dennis, Scott, Godley, & Funk, 1999). For incarcerated or hospitalized individuals (>13 days in the past 90 days), we used the last 90-day period in the community. The Substance Problem Scale (*SPS*, past month version, $\alpha = .85$) is a reliable and valid measure of consequences of substance use (Conrad et al., 2007; Dennis, Chan, & Funk, 2006; Dennis, Scott, Godley, & Funk, 1999). It has 16 items, including: seven DSM-IV substance dependence criteria, four DSM-IV substance abuse criteria, and five other indicators of substance-related problems (e.g., hiding use, close ones complaining about use). Higher scores indicate more problems.

Analyses

We used SPSS 17 for all analyses. Frequency distributions were checked for normality assumptions, missing data patterns, and out of range responses. Few data were missing, and we rectified out of range responses with hard copies of the data. We winsorized the variance to reduce the influence of outliers, (Erceg-Hum & Miroseovich, 2008) resetting extreme values (i.e., $> |2 SD|$ beyond the mean) to the closest observed value within two standard deviations of the mean. Results were not different from unadjusted analyses. We computed Pearson correlations between IDEA subscales and the SFS and SPS measures for the overall sample, and then separately for Caucasians and minorities. To ensure model parsimony, our multivariate regression models only included variables that had significant bivariate associations ($p < .10$) with the dependent variables, as recommended by Hosmer Jr. and Lemeshow (2004). Variables were then simultaneously entered into a regression model controlling for gender, minority status (0 = Caucasian, 1 = Minority), and the interactions between minority status and feeling-in-between and minority status and negativity/instability. We compared means on the IDEA scales to those reported for college-attending EAs.

Results

Bivariate Results

In the overall sample (not shown) only two of the twelve hypothesized correlations between the IDEA, SFS, and SPS scales were statistically significant. The negativity/instability scale was significantly associated with both substance use frequency (*SFS*, $r = .25$, $p < .05$) and substance use problems (*SPS*, $r = .21$, $p < .05$), supporting Arnett's (2005) hypotheses. Additionally, feeling in-between was significantly associated with *SFS* ($r = .56$, $p < .05$).

Table 1 shows the correlations between IDEA subscales, substance use frequency, and substance-related problems by minority status. (A full table for the overall sample is available upon request.) The association between feeling in-between and *SPS* was different when bivariate correlations were analyzed separately for Caucasians ($r = .275$, $p < .05$) and minorities ($r = -.07$; *ns*). Similarly, the associations between negativity/instability, *SFS*, and *SPS* were weaker and non-significant for minorities.

Multivariate Results

Table 2 presents findings from the multivariate regression models. In the substance use frequency (*SFS*) model, neither of the EA constructs nor their interactions with minority status significantly predicted *SFS*. Furthermore, the association between negativity/instability was no longer significant ($p = .067$) when holding other variables in the model constant. This model ($df: 6, 96$; $R^2 = .12$, $F = 2.24$, $p < .05$) accounted for 12.3% of the variation in substance use frequency.

In the substance-related problems (*SPS*) model, gender ($B = -1.9$) and feeling in-between ($B = .38$) were significant predictors of *SPS*. The interaction between minority status and feeling in-between ($B = -.52$) approached statistical significance ($p = .057$). This model ($df: 6, 96$; $R^2 = .205$, $F = 4.123$, $p < .001$) accounted for 20.5% of the variance in substance-related problems.

Comparison of IDEA Mean Scores to Reifman et al. (2007)

For each IDEA scale, Table 3 shows the average item scores and standard deviations for participants in the current study and college student participants in a prior study. Contrary to hypotheses, these EAs were similar to college students on self-focus. Participants were also higher on identity exploration when compared to participants in Reifman et al.'s (2007) sample. Consistent with hypotheses, EAs in this study reported lower mean scores for the possibilities, and feeling in-between scales, and scored higher on the other-focus and negativity/instability scales. These differences appeared small, with the exception of those for the other-focus scale.

Discussion

This study investigated the associations between the proposed dimensions of EA, substance use frequency, and substance-related problems. Additionally, we studied whether minority status interacted with dimensions of EA. In bivariate models, negativity/instability was significantly and positively associated with substance use frequency and substance-related

problems, and feeling in-between was positively associated with substance use frequency. In multivariate models that controlled for gender, minority status and interactions with minority status, neither IDEA scale predicted substance use frequency. In the second model, feeling in-between positively predicted substance-related problems ($p < .05$). Additionally, the interaction term between minority status and feeling in-between approached significance ($p = .057$), indicating that the association between feeling in-between and substance-related problems was negative for minorities. This finding has implications for Arnett's (2000a) theoretical framework, given that its tenets may not apply to those of different racial backgrounds.

It is unclear why most constructs in Arnett's (2000a) theory (i.e., identity exploration, experimentation/possibilities, other-focused, self-focus) were unrelated to substance use frequency and substance-related problems in this study. It may have been due to the long substance use histories (mean age of onset = 13.8) of participants in this sample. That is, these EA constructs may predict substance use better for emerging adults with later onset of substance use, or for those EAs whose heavy substance use may be developmentally limited. Also, Arnett's (2000a, 2005) theory is largely based off of major demographic trends, so it may apply to EAs across a broader continuum of substance use rather than to clinical populations suspected of disordered substance use. As this is the first study exploring the associations between these scales and EAs' substance use, additional replication studies are needed.

One novelty of this study was our sampling of diverse and lower income EAs. Arnett (2000a) suggested that more research is needed with non-college attending emerging adults, previously dubbed "the forgotten half" among EA scholars. Our study found that disadvantaged EAs report IDEA scale scores comparable to those of their college-attending peers. In fact, contrary to hypotheses, EAs in this sample reported slightly more identity exploration than college students. This was surprising, as well-off college students are thought to enjoy a period of *institutionalized moratorium* (Côté, 2006), which allows them protected time to ponder possible selves and develop their identities. Others have noted that impoverished emerging adults may actually experience *prevented adulthood* due to their lack of resources needed to navigate the transition to adulthood (Hendry & Kloep, 2007; Hendry & Kloep, 2010). The only large difference we found was that other-focus was higher in this sample. This may have been accounted for by the fact that 36.2% of participants had children. The finding that non-college attending EAs report higher identity exploration ($d = .18$) contradicts critiques that lower income adults are not afforded the opportunity to experience EA (Hendry & Kloep, 2007, 2010).

Limitations and Suggestions for Future Research

This study's findings should be interpreted cautiously. It was cross-sectional analysis, so we could not establish causal pathways. Additionally, these findings only generalize to EAs screened in substance use treatment centers that provide indigent care. Next, the sample size may have impacted this study's ability to detect small, yet meaningful correlations, and precluded extensive testing of interactions between these scales and other objective indicators of adult status (i.e., living with parents, income) in multivariate models. For

example, post hoc power analyses revealed that our study had 43% power to detect the effect size for the interaction between minority status and feeling in-between ($f^2 = .032$). Finally, we note that we found low internal consistency estimates for some IDEA scales, which could have attenuated associations between variables and may also suggest the need for scale refinement for lower income and substance misusing emerging adults.

Conclusion

Of the six self-perceived EA scales, only feeling in-between was a significant predictor of substance-related problems. As the correlation between feeling in-between and substance-related problems was different for minorities, this study also challenges the generalizability of Arnett's (2005) hypotheses. Larger sample size studies should investigate whether minority status moderates the association between feeling in-between and substance-related problems. Additionally, the IDEA scale scores of emerging adults in this sample were comparable to those of college students, indicating that, with few exceptions, disadvantaged youth have similar perceptions of this life period. Large replication studies are needed.

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References

- Arnett JJ. Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*. 2000a; 55(5):469–480. [PubMed: 10842426]
- Arnett JJ. High hopes in a grim world: Emerging adults' views of their futures and "generation X.". *Youth & Society*. 2000b; 31(3):267–286.
- Arnett JJ. Conceptions of the transition to adulthood: Perspectives from adolescence through midlife. *Journal of Adult Development*. 2001; 8(2):133–143.
- Arnett JJ. Conceptions of the transition to adulthood among emerging adults in American ethnic groups. *New Directions in Child and Adolescent Development*. 2003; 100:63–75.
- Arnett JJ. Young people's conceptions of the transition to adulthood. *Youth & Society*. 1997; 29(1):3–23.
- Arnett JJ. The developmental context of substance use in emerging adulthood. *Journal of Drug Issues*. 2005; 35(2):235–254.
- Arnett JJ, Taber S. Adolescence terminable and interminable: When does adolescence end? *Journal of Youth and Adolescence*. 1994; 23(5):517–537.
- Bishop DI, Weisgram ES, Holleque KM, Lund KE, Wheeler-Anderson JR. Identity development and alcohol consumption: Current and retrospective self-reports by college students. *Journal of Adolescence*. 2005; 28:523–533. [PubMed: 16022886]
- Bogart LM, Collins RL, Ellickson PL, Klein DJ, Martino SC. Effects of early and later marriage on women's alcohol use in young adulthood: A prospective analysis. *Journal of Studies on Alcohol*. 2005; 66(6):729–737. [PubMed: 16459934]
- Buchan BJ, Dennis ML, Tims FM, Diamond GS. Cannabis use: Consistency and validity of self-report, on-site urine testing and laboratory testing. *Addiction*. 2002; 97:98–108. [PubMed: 12460132]
- Conrad KJ, Dennis ML, Bezruczko N, Funk RR, Riley BB. Substance use disorder symptoms: evidence of differential item functioning by age. *Journal of Applied Measurement*. 2007; 8(4): 373–387. [PubMed: 18250524]

- Cote, JE. Emerging adulthood as an institutionalized moratorium: Risks and benefits to identity formation. In: Arnett, JJ.; Tanner, JL., editors. *Emerging adults in America: Coming of age in the 21st century*. Washington, DC, US: American Psychological Association; 2006. p. 85-116.
- Dennis ML, Chan YF, Funk RR. Development and validation of the GAIN Short Screener (GAIN-SS) for psychopathology and crime/violence among adolescents and adults. *The American Journal on Addictions*. 2006; 15(suppl. 1):80–91. [PubMed: 17182423]
- Dennis, ML.; White, MK.; Ives, ML. Individual characteristics and needs associated with substance misuse of adolescents and young adults in addiction treatment. In: Leukefeld, C.; Gullotta, T.; Stanton Tindall, M., editors. *Handbook on adolescent substance abuse prevention and treatment: Evidence-based practice*. New London, CT: Child and Family Agency Press; 2009. p. 45-72.
- Dennis ML, Funk R, Godley SH, Godley MD, Waldron H. Cross-validation of the alcohol and cannabis use measures in the global appraisal of individual needs (GAIN) and timeline followback (TLF B; form 90) among adolescents in substance abuse treatment. *Addiction*. 2004; 99:120. [PubMed: 15488110]
- Dennis, ML.; Scott, CK.; Godley, MD.; Funk, RR. Comparisons of adolescents and adults by ASAM profile using GAIN data from the Drug Outcome Monitoring Study (DOMS): Preliminary data tables. Bloomington, IL: Chestnut Health Systems; 1999. Retrieved from <http://www.chestnut.org/li/posters/asamprof.pdf>.
- Dennis, ML.; Titus, JC.; White, MK.; Unsicker, JI.; Hodgkins, D. Global appraisal of individual needs: Administration guide for the GAIN and related measures. Bloomington, IL: Chestnut Health Systems; 2003.
- Erceg-Hum DM, Miroseovich VM. Modern robust statistical methods: An easy way to maximize the accuracy and power of your research. *American Psychologist*. 2008; 63(7):591–601. [PubMed: 18855490]
- Erikson, EH. *Identity and the life cycle*. New York: W. W. Norton and Company; 1959.
- Gotham HJ, Sher KJ, Wood PK. Predicting stability and change in frequency of intoxication from the college years to beyond: Individual-difference and role transition variables. *Journal of Abnormal Psychology*. 1997; 106(4):619–629. [PubMed: 9358692]
- Hendry, LB.; Kloep, M. Lifestyles in emerging adulthood: Who needs stages anyway?. In: Arnett, JJ.; Kloep, M.; Hendry, LB.; Tanner, JL., editors. *Debating emerging adulthood: Stage or process?*. New York: Oxford Press; 2011. p. 77-104.
- Hendry LB, Kloep M. Conceptualizing emerging adulthood: Inspecting the emperor's new clothes? *Child Development Perspectives*. Special Issue: Emerging Adulthood Around the World. 2007; 1(2):74–79.
- Hendry LB, Kloep M. How universal is emerging adulthood?: An empirical example. *Journal of Youth Studies*. 2010; 13(2):169–179.
- Hosmer; David, W.; Lemeshow, S. *Applied logistic regression*. Second Edition. Hoboken, NJ: John Wiley and Sons;
- Kandel DB, Raveis VH. Cessation of illicit drug use in young adulthood. *Archives of General Psychiatry*. 1989; 46(2):109–116. [PubMed: 2913970]
- Leonard KE, Rothbard JC. Alcohol and the marriage effect. *Journal of Studies on Alcohol*. 1999; (Supp13):139–146.
- Lisha NE, Grana R, Sun P, Rohrbach L, Spruijt-Metz D, Reifman A, Sussman S. Evaluation of the psychometric properties of the revised inventory of the dimensions of emerging adulthood (IDEA-R) in a sample of continuation high school students. *Evaluation & the Health Professions*. (in press).
- Marcia JE. Development and validation of ego-identity status. *Journal of Personality and Social Psychology*. 1966; 3(5):551–558. [PubMed: 5939604]
- Nelson LJ, Barry CM. Distinguishing features of emerging adulthood the role of self-classification as an adult. *Journal of Adolescent Research*. 2005; 20(2):242–262.
- O'Connor BP. Identity development and perceived parental behavior as sources of adolescent egocentrism. *Journal of Youth and Adolescence*. 1995; 24(2):205–227. doi:<http://dx.doi.org/10.1007/BF01537150>.

- Ravert RD. "You're only young once": Things college students report doing now before it is too late. *Journal of Adolescent Research*. 2009; 24(3):376–396.
- Reifman A, Arnett JJ, Colwell MJ. Emerging adulthood: Theory, assessment, and application. *Journal of Youth Development*. 2007; 2(1) doi:http://WwW.nae4ha.org.proXv2librarv.uiuc.edu/directov/iyd/ivd_article.aspx?id=dded0442-fd62-4607-821b-2b67fdd997a.
- Rossman, SB.; Roman, JK.; Zweig, JM.; Rempel, M.; Lindquist, CH., editors. The multi-site adult drug court evaluation: The impact of drug courts. Washington, DC: The Urban Institute, Justice Policy Center; 2011. Retrieved from <http://www.urban.org/UploadedPDF/412357-MADCE-The-Impact-of-Drug-Courts.pdf>
- Satre DD, Mertens J, Arian PA, Weisner C. Contrasting outcomes of older versus middle-aged and younger adult chemical dependency patients in a managed care program. *Journal of Studies on Alcohol*. 2003; 64:520–530. [PubMed: 12921194]
- Satre D, Mertens J, Arian P, Weisner. Five-year alcohol and drug treatment outcomes of older adults versus middle-aged and younger adults in a managed care program. *Addiction*. 2004; 99(10):1286–1297. [PubMed: 15369567]
- Schulenberg, J.; O'Malley, PM.; Bachman, JG.; Johnston, LD. Early adult transitions and their relation to well-being and substance use. In: Settersten, RA., Jr; Furstenberg, FF., Jr; Rumbaut, RG., editors. *On the frontier of adulthood: Theory, research and public policy*. Chicago: University of Chicago Press; 2010. p. 417-453.
- Schwartz SJ, Beyers W, Luyckx K, Soenens B, Zamboanga BL, Forthun LF, Waterman AS. Examining the light and dark sides of emerging adults' identity: A study of identity status differences in positive and negative psychosocial functioning. *Journal of Youth and Adolescence*. 2011; 40(7):839–859. [PubMed: 21088875]
- Smith DC, Godley SH, Godley MD, Dennis ML. Adolescent community reinforcement approach (A-CRA) outcomes differ among emerging adults and adolescents. *Journal of Substance Abuse Treatment*. 2011; 41:422–430. [PubMed: 21831564]
- Substance Abuse and Mental Health Services Administration. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2011. Results from the 2010 National Survey on Drug Use and Health: Summary Of National Findings, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Available at: <http://www.samhsa.gov/data/nsduh/2k10nsduh/2k10results.htm>
- Titus JC, Smith DC, Dennis ML, Ives M, Twanow L, White MK. Impact of a training and certification program on the quality of interviewer-collected self-report assessment data. *Journal of Substance Abuse Treatment*. 2012; 42:201–212. [PubMed: 22138202]
- White HR, Jackson K. Social and psychological influences on emerging adult drinking behavior. *Alcohol Research & Health*. 2004–2005; 28(4):182–190.
- White HR, McMorris BJ, Catalano RF, Fleming CB, Haggerty KP, Abbott RD. Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol*. 2006; 67(6):810–822. [PubMed: 17060997]
- Winograd RP, Littlefield AK, Sher KJ. Do people who "mature out" of drinking see themselves as more mature? *Alcoholism*. Clinical and Experimental Research. 2012; 36(7):1212–1218. doi: <http://dx.doi.org/10.1111/fi.1530-0277.2011.01724.x>.

Table 1

Correlations between IDEA subscales, SFS, and SPS

	1.	2.	3.	4.	5.	6.	7.	8.
1. SPS	-	.39	-.03	.05	.19	-.20	.03	-.07
2. SFS	.46	-	.13	.10	.19	-.00	.06	.14
3. Identity Exploration	-.17	.06	-	-.14	.31	.16	.03	.27
4. Experimentation/Possibilities	.02	.05	.47	-	-.33	-.09	.47	-.02
5. Negativity/Instability	.24	.30	.01	.08	-	.02	-.01	.16
6. Other-Focused	-.12	-.02	-.05	-.02	.16	-	.23	-.02
7. Self-Focused	-.12	-.15	.53	.49	-.12	.02	-	.05
8. Feeling in Between	.28	.20	.56	.31	.27	-.05	.16	-
Means	2.2	0.2	24.0	15.8	19.5	9.2	19.7	9.4
(SD)	3.0	.2	3.1	2.7	4.2	2.0	2.6	2.0

1. Emboldened correlations are significant at $\alpha < .05$, and italicized correlations are significant at $\alpha < .01$. SFS = Substance Frequency Scale, SPS = Substance Problem Scale (Past Month version)
2. Correlations under the diagonal are for Caucasians ($n=55$), and those above the diagonal are for minorities ($n=48$).
3. Means and standard deviations are for whole sample.

Table 2

Results from regression models predicting SFS and SPS

	B	95% CI	
		LB	UB
<i>Model 1: SFS (df:6, 96; R² = .12, F = 2.24, p<.05)</i>			
Constant			
Gender	-.07	-.14	.01
Minority Status	.05	-.37	.47
Feeling-In-Between	.01	-.01	.04
Negativity/Instability	-.01	-.00	.02
Feeling-In-Between*Minority Status	-.00	-.04	.03
Negativity/Instability*Minority Status	-.00	-.02	.01
<i>Model 2: SPS (df:6, 96; R² = .205, F = 4.123, p<.001)</i>			
Constant	-1.0	-5.9	3.9
Gender	-1.9*	-3.1	-.83
Minority Status	4.3	-2.2	10.8
Feeling-In-Between	.38*	.01	.77
Negativity/Instability	.15	-.05	.34
Feeling-In-Between*Minority Status	-.52 ^a	-1.1	.02
Negativity/Instability*Minority Status	-.02	-.28	.24

SFS = Substance Frequency Scale, SPS=Substance problem Scale, LB=lower Bound of 95% Confidence Interval, UB = Upper Bound of 95% Confidence Interval

* $p < .05$,

^a $p = .057$

Table 3

Average Scale Item Responses for Current Study and College Student Sample

	Current Study (n=105) M (SD)	Reifman et al., 2007^a (Study 3: n=101) M (SD)	Cohen's <i>d</i>^b
Identity Exploration	3.44 (.44)	3.36	.18
Experimentation/Possibilities	3.16 (.55)	3.28	-.21
Negativity/Instability	2.78 (.60)	2.90	-.20
Other-Focused	3.08 (.67)	2.54	.81
Self-Focused	3.29 (.42)	3.32	.07
Feeling In-Between	3.13 (.68)	3.26	-.19

^a Standard deviations were not reported in Reifman et al. (2007). Effect size estimate assumes equal variances for both groups.

^b Exact sample size of emerging adults was estimated based on author's note that 83.5% of the overall sample (n=120) in this study were between the ages of 18–26.