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Reciprocal Effects of Transitional Instability, Problem Drinking, and Drinking Motives in Emerging Adulthood

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Abstract The cumulative experience of different transitions over a limited time is known as transitional instability. Young adulthood is a time of instability that can promote problem drinking. Theoretically, however, transitions could have positive or negative effects. This study was designed to evaluate reciprocal associations between transitional instability and problem drinking in emerging adults. These effects were tested in a sample of 402 university student participants who were under the age of 21 at time 1. Participants completed self-report measures of drinking problems, drinking motivations, and different transitions common during emerging adulthood (e.g., transferring to a new school or moving back in with parents). One year later, 285 of these participants completed these same measures. Data were analyzed with latent variables cross-lagged structural equation models. The results showed that problem drinking at time 1 was associated with increased transitional instability over the 1-year course of the investigation. Also, transitional instability at time 1 was associated with lower problem drinking by time 2. This later, unexpected effect may be explainable by elements of role compatibility theory. Problem drinking promotes transitional instability in emerging adults. However, transitions may also signify entry into adult roles that can lessen problem drinking over time.

Keywords Drinking motivations · Transitions · Instability · Drinking problems · Emerging adults

Emerging adulthood is a term used to describe the transition from adolescence to adulthood, with a particular focus on ages 18–25 (Arnett 2000). Emerging adulthood is a period of the lifespan during which transitions, developmental tasks, and turning points are abundant and intense. These transitions often mark the initiation of new roles and responsibilities that are associated with increased independence and autonomy from parents, new living arrangements, and changes in employment and educational pursuits (Arnett 2000, 2005). In the long run, many of these transitions can be beneficial, but during emerging adulthood such transitions can generate a sense of instability that can be deleterious to well-being. For example, moving out of the parental home and starting college have been associated with substantial increases in alcohol consumption (Stice et al. 1998; Timberlake et al. 2007). This is a major public health concern as alcohol dependence rates have been found to be higher among 18–24 year olds than other ages across the lifespan (Windle and Zucker 2010). At the same time, heavy alcohol use itself may promote transitions, such as loss of a job or having to move back in with parents (Sandberg-Thoma et al. 2015). Therefore, the primary aim of this investigation was to simultaneously test the effect of transitional instability on problem alcohol use among emerging adults and the effect of problem alcohol use on transitional instability over a one-year time period.

In accord with Arnett's (2005) theoretical framework, we focused on transitional instability as a developmental experience between adolescence and adulthood that is characterized by changes and uncertainty related to work, college, romantic partners, residential statuses, and academic pursuits. We adopted the definition of transitions from Krohn et al. (1997)

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as "short-term changes in the life course, including movement into (e.g., one's first job), out of (e.g., retirement), or along (e.g., being fired) life course trajectories" (p. 87). The agglomeration of such transitions contributes to what we characterize as "transitional instability."

Transitional Instability

Emerging adulthood is a time when individuals initiate new roles and activities associated with educational pursuits, employment, romantic relationships, and housing. For example, nearly 70% of high school graduates immediately enroll in college, yet only about half of them graduate from the institution that they initially enrolled in, if they graduate at all (National Center for Education Statistics 2013). In a recent study of approximately 9000 young adults, 36% of those who transitioned out of their parents' house moved back home at least once (Sandberg-Thoma et al. 2015). Instability has also been evident in romantic relationships, particularly as they get comingled with housing, and the number of cohabitating emerging adults has increased over the last several decades (Stanley et al. 2011). The established literature on transitions in adolescence has largely been focused on normative developmental transitions, such as puberty and high school graduation (e.g., Galambos and Tilton-Weaver 2000; Graber and Brooks-Gunn 1996; Schulenberg et al. 2004). Yet the transitional instability that is the focus of the present investigation is a blend of normative developmental tasks along with non-normative changes that may signal, if not generate, difficulties for the emerging adult.

There are potentially different effects associated with various transitions (e.g., starting college or losing a job) although the accumulation of shifts that constitute transitional instability has been predictive of negative outcomes, including substance abuse during emerging adulthood (Allem et al. 2015). Such evidence suggests that the effects of transitions may be cumulative and perhaps representative of a more general experience of chaos. Staff et al. (2010) summarized this perspective by observing that "It is a fundamental truism in developmental psychopathology that difficulties accumulate over time, building on one another across domains in a cascading manner that serves to direct the course of development toward continued and increasing difficulties" (p. 928).

Transitional instability can have pernicious effects on well-being for several reasons. First, transitions often represent new developmental challenges such as learning a new academic system and routine, adjusting to a new roommate, or learning the procedures required for a new job. For many people, these challenges can be stressful (e.g., American College Health Association 2014; Turner and Lloyd 2004; Wilbum and Smith 2005).

Second, transitional instability is often accompanied by a loosening of social bonds that otherwise serve to guide, if not restrain, behavior and contribute to emerging adults' sense of identity. For example, moving out the parental home to attend college often generates distance between emerging adults and their family and friend social networks, along with their attendant value systems. This can generate new found opportunities for exploring their romantic or vocational identities with minimal surveillance or deterrence from an established social network (Arnett 2000). Such exploration can facilitate experimentation and engagement in risky behaviors such as illegal drug use, alcohol misuse, or unsafe sex (e.g, Lewis et al. 2009; Todd 2006).

Third, transitional instability, by its very nature, can thrust young people into adult roles that they are not entirely prepared to manage and that might be accompanied by normative prescriptions for engaging in other "adult behaviors" in the mind of the emerging adult. Starting a new job with older coworkers or moving in with a boy/girlfriend could influence attitudes about the appropriateness of behaviors, such as alcohol and sex.

Transitional Instability and Alcohol use

There is compelling evidence to substantiate the effects of certain life course transitions on alcohol use in emerging adulthood. For instance, two of the most well documented predictors of increased alcohol use during this developmental stage are transitioning out of high school and moving out of the parental home (Bachman et al. 1984; Kirst et al. 2014). In addition, living in a cohabiting relationship has been associated with increases in heavy drinking episodes (Bachman et al. 1984; Li et al. 2010). In young adults, employment has also been associated with increased drinking, particularly in men (Christie-Mizell and Peralta 2009).

It is reasonable to expect that transitional instability in emerging adults is predictive of increases in problem drinking, although it should be noted that the association between transitional instability and problem drinking is not entirely straightforward (e.g., Schulenberg and Maggs 2002). Kandel's role compatibility theory (Kandel 1980; Yamaguchi and Kandel 1985) explains why some instances of transitional instability might actually lessen problem drinking. This theory highlights the influence of role selection and role socialization on drug and alcohol use. Briefly, people who use drugs and alcohol to a large extent often postpone entry into responsible adult roles (role selection effect). At the same time, those who transition into adult roles tend to decrease their use of drugs and alcohol (role socialization effect). From the perspective of role compatibility theory, a more positive way of looking at transitional instability would be as a marker of entry into more adult-like roles that cause emerging

adults to actually curtail their problem drinking behaviors. It is possible that as emerging adults make these transitional progressions, they start to cut back on their drinking behaviors in an effort to appropriately assume the responsibilities inherent in these new roles. Such a trajectory was documented in the Monitoring the Future Project (Bachman et al. 2002; Bachman et al. 1997) which showed that newly acquired freedoms can promote substance use but newly acquired responsibilities can decrease substance use in young adults.

Interpretation of cross-sectional research on transitions and alcohol use is complicated by the fact that problem drinking might actually initiate or accelerate certain transitions during emerging adulthood. For instance, problem drinking has been predictive of earlier returns back to the parental home among boomerang kids (children who leave and then return to the parental home; Sandberg-Thoma et al. 2015). Also, research shows that heavy alcohol use creates a risk for dropping out of school (Krohn et al. 1997). As such, it is reasonable to assume that problem drinking could also promote such transitions as loss of a job, moving in with a boy/girlfriend due to drinking related conflicts with parents, or even moving out of a cohabiting relationship due to similar conflicts with a romantic partner. For this reason, we adopt what Gotham et al. (2003) refer to as a "reciprocal effects theory." Such theories presume that alcohol involvement and developmental tasks influence each other. In a sample of adolescents, Krohn et al. (1997) documented evidence of reciprocal effects such that alcohol use predicted dropping out of school, becoming a teen parent, and living independent from parents; these same transitions predicted increased alcohol use during early adulthood.

Goals of the Present Study

Based on the aforementioned theories and findings, we tested whether transitional instability would be associated with increased problem drinking among emerging adults and whether problem drinking would be associated with increased transitional instability. These tests were conducted in a cross-lagged latent variables model with a 1-year interwave interval. The assessment of problem drinking followed two approaches. The first assessed quantity and frequency of consumption along with frequency of common problems associated with heavy alcohol consumption (e.g., missing school or work and concern or criticism from family members). The second approach to problem drinking focused on motivations for drinking. Developmental scholars believe that there are a range of reasons for alcohol consumption and binge drinking in emerging adulthood (Cooper 1994; Kuntsche et al. 2005, 2006). These include the natural desire to experiment before reaching adulthood, identity exploration, sensation-seeking, attempting to manage emotional distress, and gaining peer acceptance (Arnett 2005; Baer 2002; Beck et al. 1995; Kuntsche et al. 2005; Pandina et al. 1984). Emerging adults who drink on a largely social basis may be more likely to do so in moderation, whereas those who drink to manage emotional distress or in the pursuit of sexual relations may be more likely to binge drink as a form of self-medication (e.g., Gabel et al. 1980; Jasinski and Ford 2007). Prior research has shown that drinking motivations are associated with a greater likelihood of subsequent alcohol abuse, alcohol dependence, and drunk driving (Beck et al. 2013). Therefore, we also predicted that motivations for drinking (e.g., to ease emotional pain) would be reciprocally related to transitional instability.

Method

Participants

Participants in this investigation were 402 emerging adults who were recruited as part of a larger study on underage drinking and who were attending large state universities in the Midwestern or Southwestern United States. The sample was 74% women and 26% men, with a mean age of 19.27 years ($SD = 0.71$). At time 1, all participants were under the legal drinking age of 21. The sample included <1% who identified as American Indian/Alaskan Native, 1% Native Hawaiian/Pacific Islander, 7% East Asian, 4% South Asian, 1% Middle Eastern, 4% Black, 11% Hispanic/Latino, and 71% White. The majority of participants (85%) were in their junior or senior year of university studies. The living arrangements of these students varied with some who were living with parents (5%), in an apartment or house (54%), in a dormitory (24%), in a Greek house (16%), and other housing arrangements (1%). At time 1, 42% of the participants indicated that they were in a romantic relationship, and 58% were not in a relationship. Participants were asked to describe their "frequency of drinking beer/wine/wine coolers/champagne during the past year," with 10% indicating "never," 21% indicating "once or twice," 32% indicating "1–3 times a month," and 37% indicating "at least once a week." They were also asked "How frequently do you drink to get drunk?" with 31% responding "never," 20% indicating "seldom", 28% "occasionally," and 21% "frequently."

Procedure

Participants were recruited for a study on health behaviors in young adults though announcements made in university classes and fliers posted in campus buildings. Because of our particular interest in underage drinking, eligibility criteria included being aged 18–20, access to the internet, and willingness to participate in a follow-up assessment one year after time 1. Interested participants contacted the research staff via email and received a reply with a URL that took them to the

online survey with measures described in the following section. Initially, 450 responses were recorded. However, after deleting 10 duplicate responses, 30 cases from participants over 20 years of age (i.e., of legal drinking age), and 8 cases from those who completed the questionnaire in under 13 min (which was not deemed sufficient to adequately read and respond to all items on the questionnaire), 402 valid cases remained. All data were collected at the start of the academic year during the months of August and September. In exchange for their participation, participants were sent a $15 retail gift card. At time 2, one year after time 1, all participants were contacted again and invited to complete a follow-up questionnaire. This questionnaire was administered with the same method as the time 1 questionnaire, and contained a subset of the same items presented on the time 1 questionnaire. A total of 298 responses were obtained at time 2, representing a response rate of 74% (see "Missing Data Analyses" in the Results section for further analyses of participant characteristics and attrition). Three responses that were completed in less than seven minutes, which was deemed too short to adequately respond to each item on the questionnaire, were deleted, 10 cases were lost due to participant-generated time 1 and time 2 code numbers that could not be matched, and 104 participants from time 1 did not respond to the time 2 solicitation, resulting in 285 valid cases at time 2. Participants received a $20 retail gift card for their participation at time 2. Informed consent was obtained from all individual participants included in the study.

Measures

Instability A brief measure of instability (Bowers et al. 2016) was used in this study. Drawing from the literature surrounding transitions and changes that occur in emerging adulthood (i.e., Arnett 2004, 2005), we created items to capture transitions that are common, stressful, and that represent a potential disruption in emerging adults' social networks. Items were developed to assess the types of transitions that would be particularly common to young adults in a university setting with empirical evidence from the literature on emerging adults (e.g., Pampel et al. 2014). This measure contained five items (e.g., "moved back in with your parents," and "started a new job or searched for employment") that participants were asked to report on over the course of the prior six calendar months. Response options ranged from 0 (*0 times*) to 10 (*10 or more times*). As an inventory of transitional life events, these items were not necessarily intended to exhibit internal consistency, although their alpha reliabilities reflect some degree of positive intercorrelation (time 1 α = .78, time 2 α = .65). Participants reported on average 1.63 (*SD* = 3.07) transitions in the six months immediately prior to time 1 and 1.18 transitions (*SD* = 2.81) in the six months immediately prior to time 2 (see Table 1 for individual item means).

Problem Drinking Three different indicators were used to assess problem drinking. First, participants completed a 3-item measure of alcohol use (Raffaelli et al. 2007). This instrument measures the frequency of drinking beer/wine/wine coolers/champagne/liquor in the past 30 days and the past year on a 1 to 4 scale, anchored at *never* to *10 or more times* for the 30-day item, and *never* to *at least once a week* for the item with a 1-year frame of reference. The third item assessed the number of heavy drinking episodes (5 or more drinks in one sitting) in the past 30 days on a 1 (*none*) to 5 (*6 or more times*) scale. Internal consistency reliability for this scale was α = .87 at time 1 and α = .88 at time 2. Second, participants completed the negative consequences of drinking scale (Hays and DiMatteo 1987). This 9-item scale asked respondents to report on how many times in the past six months they have experienced a variety of different problems associated with alcohol use, including for example, "concern or criticism from friends," and "decrease in

Table 1 Means and standard deviations of transitional instability items, problem drinking, and drinking motivation measures at time 1 and time 2

Manifest variable	Time 1		Time 2		Possible Scale
	*M**	*SD*	*M**	*SD*	Range
Moved in or out with a boyfriend or girlfriend	0.11 (7.9%)	0.45	0.10 (4.6%)	0.55	0–10
Moved back in with your parents	0.38_a (29.8%)	0.89	0.25_b (14.3%)	0.74	0–10
Dropped out of college or reenrolled in college after dropping out	0.03 (2.1%)	0.31	0.06 (1.9%)	0.56	0–10
Transferred to a new college	0.08_a (7.6%)	0.34	0.04_b (2.2%)	0.24	0–10
Started a new job or searched for employment	1.01_a (61.3%)	1.28	0.71_b (56.5%)	0.71	0–10
Alcohol Use	7.79_a	3.04	8.57_b	2.91	3–13
Negative Consequences of Drinking	11.53	3.59	11.15	2.78	9–36
Social Facilitation Drinking	31.64_a	11.23	34.06_b	10.85	12–48
Emotional Pain	4.60	2.25	4.84	2.28	3–12
Peer Acceptance	7.14	3.35	7.07	3.17	5–20
Seeking Sex	4.55	2.11	4.46	1.92	3–12

Means with different subscripts differ at $p < .05$ as determined by Wilcoxon signed ranks tests. Values below the mean in () represent % of participants who reported ≥1 such transition. At time 1 25% of the respondents had not experenced any of the transitions, and at time 2 32% had not experience any of the transitions in the past year

performance at school or work due to drinking." Response options for all items were 1 (*never*) to 4 (*4 or more times*). Internal consistency reliability for this scale was $\alpha = .81$ at time 1 and $\alpha = .72$ at time 2. Third, the social facilitation subscale from the Social Context of Drinking Scales instrument (Beck et al. 1995) was used to assess frequency of drinking for different reasons that are common among emerging adults. This 12-item subscale asks respondents to indicate how often they drink alcohol "to get drunk," "to have a good time," "as part of a drinking game," and "at a party with friends" for example. Response options ranged from 1 (*never*) to 4 (*frequently*). Although this scale contains some items that measure social motives for drinking, it also includes items that are not necessarily reflective of social motivations (e.g., to get drunk, when you have no classes or obligations the next morning). Accordingly, these items reflect a general measure of frequency of drinking in different contexts common to university students. Internal consistency reliability for this scale was $\alpha = .96$ at time 1 and $\alpha = .96$ at time 2.

Drinking Motivations Three subscales from the Social Context of Drinking Scales instrument (Beck et al. 1995) were used to measure motivations for drinking alcohol. Participants were asked to indicate how often they drank alcohol for a variety of different reasons, on a 4-point scale where 1 = *Never*, 2 = *Seldom*, 3 = *Occasionally*, and 4 = *Frequently.* One subscale measured drinking to reduce emotional pain with three items that included, for example, "to forget about personal problems." The next subscale measured drinking to gain peer acceptance with five items that included, for example, "to get someone's approval (e.g., a close friend, a boyfriend, or girlfriend)." The final subscale measured drinking for the purpose of seeking sex with three items that included, for example "to make it easier to go to bed with someone." At time 1, the internal consistencies of the drinking to reduce emotional pain, drinking to gain peer acceptance, and drinking for seeking sex subscales were $\alpha = .87$, .92, and .79, respectively. The corresponding reliabilities at time 2 were $\alpha = .85$, .89, and .73, respectively.

In addition to the aforementioned measures, participants completed a series of demographic questions in addition to several other measures not relevant to the present report. Means and standard deviations for all manifest variables at time 1 and time 2 appear in Table 1 and a correlation matrix of major study variables appears in Table 2.

Missing Data Analyses

As noted previously, 74% of the respondents from time 1 completed the second wave of data collection. Little's (1988) MCAR (Missing Completely At Random) test was used to evaluate the pattern of missingness in the data using SPSS 22. The results indicated that the pattern was missing completely at random, $\chi^2 = 7083.00$, $df = 6985$, $p = .20$.

Modern approaches to the analysis of missing data have been developed to overcome the serious pitfalls to listwise deletion, namely reduced statistical power and biased estimates when data are not missing completely at random (e.g., Baraldi and Enders 2010). A desirable alternative to listwise deletion is full information maximum likelihood (FIML) estimation due to its ability to produce unbiased estimates when data are missing at random or missing completely at random. Therefore, FIML was used in the subsequent model testing analyses.

Results

Data from this investigation were analyzed with structural equation modeling with latent variables using maximum likelihood estimation. This data analytic technique has the advantage of correcting for sources of measurement error that adversely affect the reliability of measured variables while simultaneously establishing the validity of the constructs under study.

Table 2 Correlation matrix of observed study variables

	1	2	3	4	5	6	7	8	9	10	11
1. Moved In/Out Boy/Girl Friend.	--	.56	.86	.78	.33	.02	.07	.06	.19	.19	.18
2. Moved Back w/ Parents	.26	--	.63	.56	.23	.00	.01	.04	.10	.09	.09
3. Drop Reenroll College.	.78	.31	--	.87	.38	.04	.04	.06	.21	.21	.20
4. Transfer New College	.23	.12	.16	--	.34	.01	.02	.01	.15	.16	.13
5. Start New Job	.23	.23	.30	.15	--	−.02	.00	−.03	.17	.07	.07
6. Alcohol Use	.06	.04	.10	.06	−.01	--	.46	.87	.33	.31	.44
7. Negative Conseq. of Drinking	.32	.05	.30	.11	.11	.49	--	.42	.47	.42	.47
8. Social Facilitation Drinking	−.02	.06	−.01	.06	.02	.82	.43	--	.38	.38	.48
9. Emotional. Pain	.11	.20	.13	.14	.09	.34	.40	.42	--	.58	.62
10. Peer Acceptance	.14	.21	.13	.14	.02	.31	.35	.39	.45	--	.65
11. Seeking Sex	.07	.23	.13	.09	.08	.32	.37	.44	.60	.56	--

Pearson correlation coefficients above the diagonal are based on time 1 data and all coefficients > .09 are significant at $p < .05$. Coefficients below the diagonal are based on time 2 data and all coefficients > .11 are significant at $p < .05$.

Measurement Analysis

Prior to testing the hypotheses, two measurement models were examined for their fit. The first modeled the assessment of transitional instability and problem drinking. Transitional instability was treated as a latent variable at time 1 and time 2 indicated by each of the corresponding five items from the instability scale. Although other latent variables in this investigation were comprised of multiple composite scales, transitional instability was represented at the level of individual items because these individual items were the only such indicators available in this data set. Problem drinking at time 1 and time 2 were also treated as latent variables indicated by the alcohol consumption measure, negative consequences of drinking scale, and the social facilitation subscale of the Social Context of Drinking scales from time 1 and time 2. Correlations between all latent variables were specified, with maximum likelihood estimation in AMOS 22. The error term for each indicator at time 1 (e.g., alcohol consumption T1) was correlated with the error term of its respective indicator at time 2 (e.g., alcohol consumption T2) as recommended by Little (2013). The model is depicted in Fig. 1 and the results indicate that the model provided a close fit to the sample data, $\chi^2 = 154.86$, $df = 93$, $p < .001$, $\chi^2/df = 1.67$, CFI = .98, NFI = .95, TLI = .97, RMSEA = .04 (90% ci .03–.05).

The second measurement model tested the fit of the transitional instability and drinking motivation variable. Transitional instability was indicated exactly as it was in the prior model, and drinking motivation was treated as a latent variable at time 1 and time 2, each indicated by the respective subscales of the Social Context of Drinking scales: drinking to reduce emotional pain, drinking to gain peer acceptance, and drinking for seeking sex. The model is depicted in Fig. 2 and the results indicate that it represents a close fit to the sample data, $\chi^2 = 121.09$, $df = 93$, $p = .03$, $\chi^2/df = 1.30$, CFI = .99, NFI = .96, TLI = .98, RMSEA = .03 (90% ci .01–.04).

Hypothesis Tests

The hypotheses for this study were tested in two structural equation modeling analyses in AMOS 22 using maximum likelihood estimation. The first model tested the prediction that transitional instability would predict greater problem drinking and that problem drinking would predict greater transitional instability. These predictions were tested in a cross-lagged model in which time 1 instability and time 1 problem

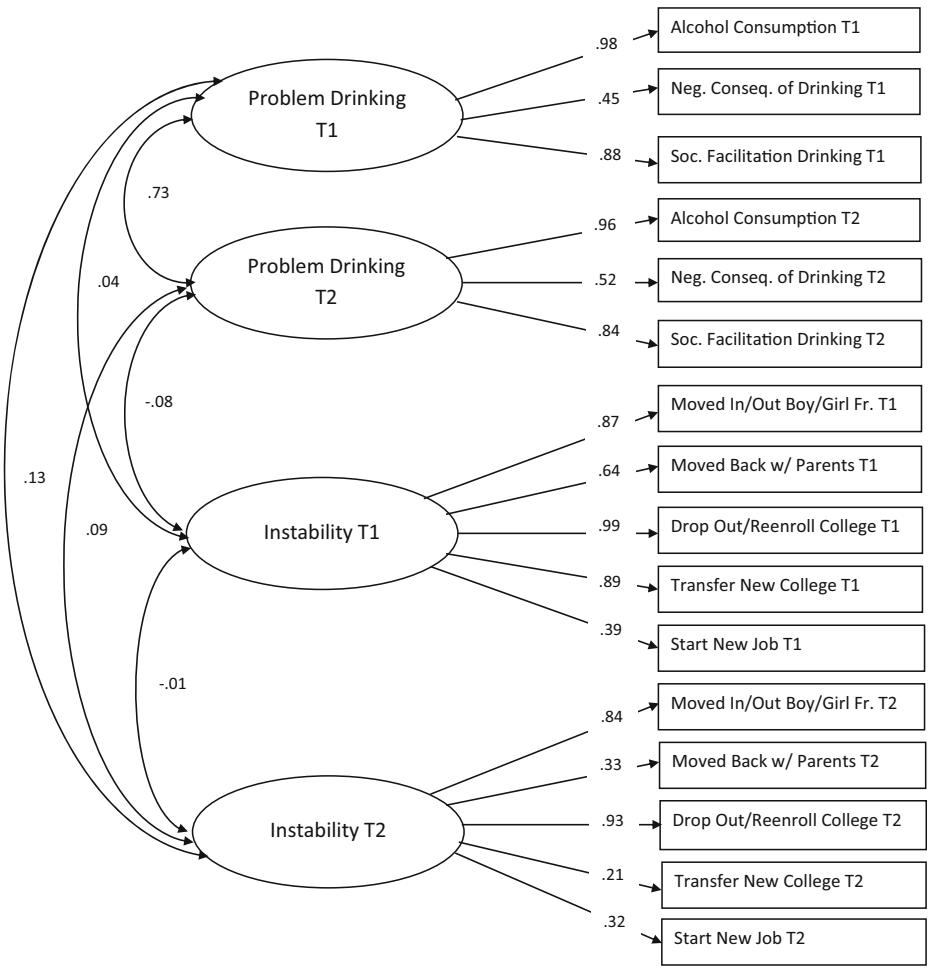

Fig. 1 Problem Drinking and Instability Measurement Model. Values within single–headed arrows are standardized factor loadings and values within double-headed arrows are correlation coefficients. Correlations > .09 are statistically significant at $p < .05$. All factor loadings are significant at $p < .001$

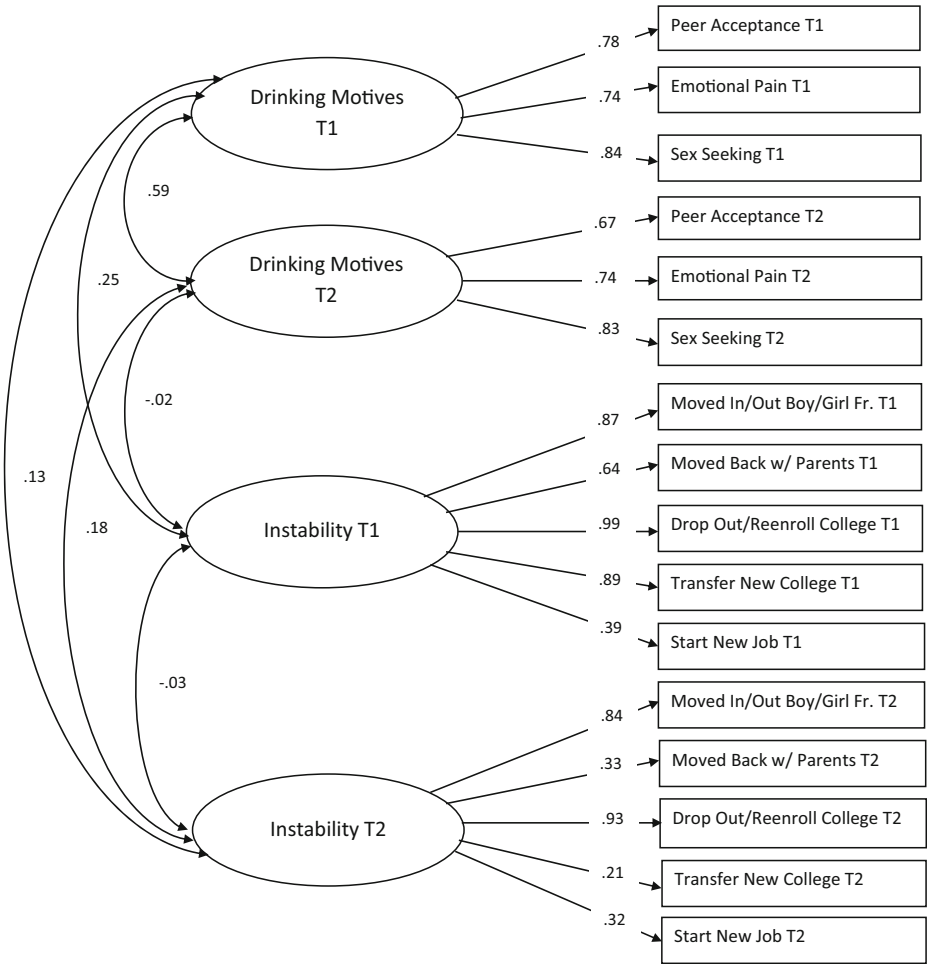

Fig. 2 Drinking Motives and Instability Measurement Model. Values within single–headed arrows are standardized factor loadings and values within double-headed arrows are correlation coefficients. Correlations > .09 are statistically significant at $p < .05$. All factor loadings are significant at $p < .001$

drinking were correlated (effectively partialling the effect of one from the other in estimations of subsequent paths), with subsequent paths from time 1 instability to time 2 problem drinking and time 1 problem drinking to time 2 instability. A correlation was specified between each of the error terms associated with the endogenous variables. Results of this analysis appear in Fig. 3. The model depicted in Fig. 3 provided a close fit to the sample data, $\chi^2 = 154.86$, $df = 93$, $p < .001$, $\chi^2/df = 1.67$, CFI = .98, NFI = .95, TLI = .97, RMSEA = .04 (90% ci .03–.05). The results indicate a strong autoregressive effect for

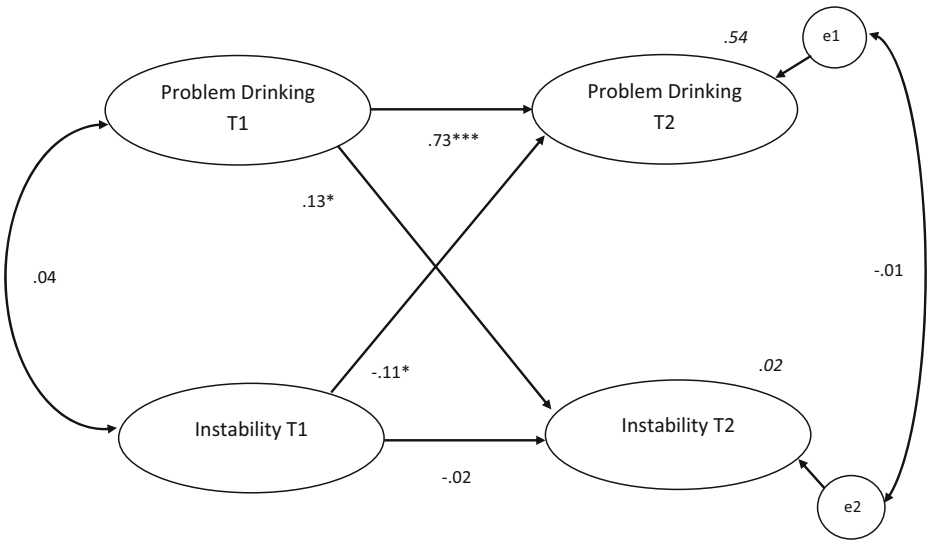

Fig. 3 Problem Drinking and Instability Structural Model. Coefficients under straight arrows are standardized regression coefficients. Coefficients next to curved arrows are correlation coefficients. Italicized coefficients represent R^2 values. For ease of presentation manifest variables and their error terms are omitted for the model.* $p < .05$. ** $p < .01$. *** $p < .001$

problem drinking over the 1-year observation (β = .73, $p < .001$) but no consistency over time in instability (β = −.02, *ns*). As predicted, higher problem drinking at time 1 was associated with greater instability reported at time 2 (β = .13, $p < .05$). However, greater instability at time one was predictive of lower problem drinking at time two (β = −.11, $p < .05$).

The second structural model was comparable to the first, however, in this case associations between instability and drinking motivations were modeled. Results of this analysis appear in Fig. 4. The model depicted in Fig. 4 had a close fit to the sample data, $\chi^2 = 121.09$, $df = 93$, $p = .03$, $\chi^2/df = 1.30$, CFI = .99, NFI = .96, TLI = .98, RMSEA = .03 (90% ci .01–.04). As evident from Fig. 4, there was a strong autoregressive effect for drinking motivations over the 1-year observation (β = .64, $p < .001$) and a significant correlation between instability and drinking motivations at time 1 ($r = .25$, $p < .001$). Greater drinking motivations at time 1 were predictive of greater instability at time 2 (β = .15, $p < .05$). However, greater instability at time 1 predicted lower drinking motivations at time 2 (β = −.18, $p < .01$).

Discussion

This study was designed to test a reciprocal effects model in which transitional instability was expected to predict problem drinking, and problem drinking would predict transitional instability over the course of one year. At a general level, the results were consistent with reciprocal effects, such that instability and drinking both had effects on each other over time. As would be predicted by a model based on negative effects of alcohol use, more problem drinking and higher drinking motivations resulted in increased transitional instability over time. However, greater transitional instability predicted lower problem drinking and lower motivations for drinking at time 2, which may be explainable by role compatibility theory.

Problem drinking at time 1 was associated with higher transitional instability at time 2, after controlling for transitional instability at time 1 and its correlation with time 1 problem drinking. This is consistent with findings from other studies in the literature that documented predictive effects of problem drinking on specific transitions such as moving back in with parents (Sandberg-Thoma et al. 2015) and dropping out of school (Krohn et al. 1997). It appears that problem drinking may generate a propensity to experience certain types of transitional instability during emerging adulthood.

The findings from this study also show that drinking motivations promote transitional instability. This finding is new to the literature. Recent research shows that deleterious outcomes of drinking can be predicted not just by the quantity of alcohol consumed, but rather by reasons for drinking (e.g., Beck et al. 2008; Beck et al. 2013). Not surprisingly, people who drink for the purpose of easing emotional pain or for the purpose of seeking sex are most likely to have problems with alcohol dependence and driving while intoxicated (Beck et al. 2013). It stands to reason that people who drink for such reasons experience increased instability in their lives. The common thread in all of the drinking motivations assessed in this investigation is the pursuit of alcohol consumption as an attempted solution to a problem (fitting in with peers, seeking sex, coping with emotional pain) common to emerging adulthood. It is possible that drinking motivations are part of a more abstract latent variable such as "poor coping skills" or "poor problem solving skills" that generate more transitional instability. The outcome of poor problem solving skills for example could easily necessitate having to transfer to a different college, move back in with parents, or seek a new job, presumably because of something that went wrong and was not adequately repaired in the prior educational, housing, or employment context.

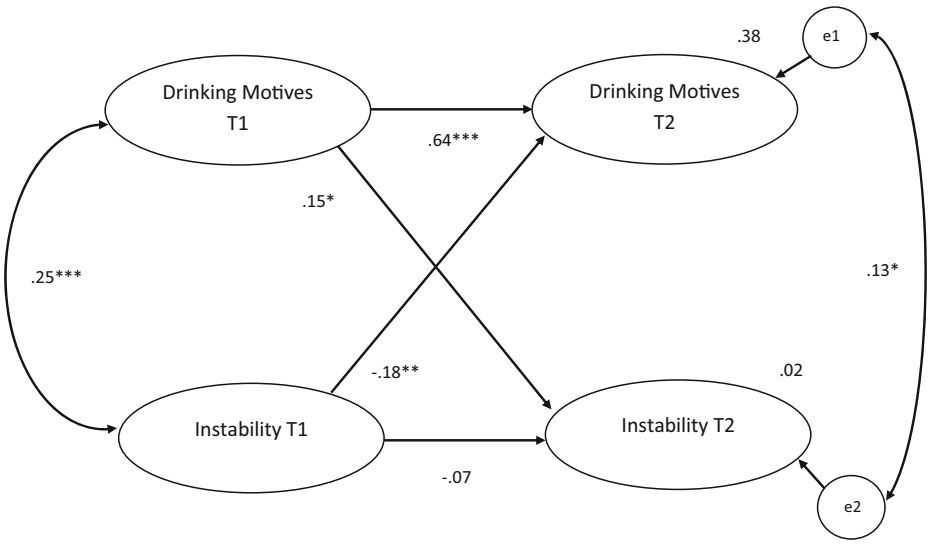

Fig. 4 Problem Drinking and Instability Structural Model. Coefficients under straight arrows are standardized regression coefficients. Coefficients next to curved arrows are correlation coefficients. Italicized coefficients represent R^2 values. For ease of presentation manifest variables and their error terms are omitted for the model. * $p < .05$. ** $p < .01$. *** $p < .001$

Prior research showing associations between certain life transitions and increased alcohol consumption in emerging adulthood (e.g., Stice et al. 1998; Timberlake et al. 2007) suggests that transitional instability would lead to problem drinking and greater motivations for alcohol consumption. However, the results were opposite to this prediction: Instability led to lower problem drinking and lower motivations for drinking. This effect may be explained from the vantage of Kandel's role compatibility theory (Kandel 1980; Yamaguchi and Kandel 1985). According to this theory, people who transition into adult roles tend to decrease their use of drugs and alcohol. This is known as a role socialization effect. Starting a new job, enrolling in college, and moving in with a boy/girlfriend can all require adjustments in daily routines that may be stressful, although they also mark progression down the path to adulthood. It is possible that as emerging adults make these transitional progressions, they start to cut back on their drinking behaviors in an effort to appropriately assume the responsibilities inherent in these new roles.

The results indicate comparable positive effects of transitional instability on drinking motives. Greater transitional instability at time 1 was associated with lower drinking motivations at time 2. This effect also fits well with the role socialization effect described in Kandel's (1980) role compatibility theory. As emerging adults enter the workforce, cohabiting relationships, or even move back in with their parents, they may find themselves in roles that require greater responsibility, mindfulness, and diligence in how they behave. These newfound roles, for example, may cause emerging adults to begin to eschew consumption of alcohol for the purpose of seeking sex or fitting in with friends; rather, their priorities may shift to other adult-like activities because their new roles give them a sense of purpose.

There are a number of scope conditions that limit the interpretation of this study's findings. First, all participants were university students at time 1. Some forms of transitional instability measured in this study (e.g., dropping out or re-enrolling in college) have no analog in a non-university population. Therefore, these results may not generalize to young adults who are not attending a university. Second, the transitional instability measure was limited to a small number of potential transitions experienced by this population. The assessment of additional transitions that may have occurred in the lives of our participants could have altered the findings of this investigation if included. Third, transitions encountered during young adulthood can be influenced by substance use during high school (Allem et al. 2016). The analyses from the present investigation do not control for substance use during high school. Fourth, different transitions may have differing effects on problem drinking and vice versa. It may, therefore, be useful in future research to identify different classes of transitions that may have differing associations with alcohol consumption. Fifth, the measure of transitional instability did not measure the reasons for the transition. Certain transitions, such as dropping out of school, could have a variety of effects on stress and drinking depending upon the reason (e.g., because of failing classes versus starting a full time job). Sixth, the interwave interval of this study was only one year. The reciprocal effects of transitional instability and problem drinking might be more or less pronounced over longer periods of time. Seventh, one of the drinking measures contained an item that assessed heavy drinking episodes as five or more drinks which would underestimate binge drinking for women according to NIAAA guidelines. Finally, this sample was disproportionately female and it could be the case that associations between various transitions and drinking are different for men and women, particularly in that women may be less inclined to develop problem drinking in response to transitional instability.

In conclusion, the results of this investigation support reciprocal effects of transitional instability and problem drinking in emerging adults. Problem drinking and drinking motivations appear to generate subsequent transitional instability. However, transitional instability reduced problem drinking and drinking motivations over time. This is an unusual reciprocal effect in that the direction of causality over time for the drinking→instability effect is opposite that of the instability→drinking effect. This may reflect a development process whereby problem drinking earlier in emerging adulthood generates transitional instability, but that transitional instability ultimately lessens problem drinking as emerging adults grow older and mature out of their former drinking patterns.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

Allem, J. P., Soto, D., Baezconde-Garbanati, L., & Unger, J. (2015). The relationship between the accumulated number of role transitions and hard drug use among Hispanic emerging adults. *Journal of Psychoactive Drugs, 47*, 60–64. doi:10.1080/02791072.2014.1001099.

Allem, J. P., Sussman, S., Soto, D. W., Baezconde-Garbanati, L., & Unger, J. B. (2016). Role transitions and substance use among Hispanic emerging adults: A longitudinal study using coarsened exact matching. *Addictive Behaviors, 58*, 95–99. doi:10.1016/j.addbeh.2016.02.032.

American College Health Association. (2014). Undergraduate reference group executive summary. Retrieved from The National College Health Assessment reports: http://www.acha-ncha.org/reports_ACHA-NCHAII.html.

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*, 469–480. doi:10.1037//0003-066X.55.5.469.

Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. New York: Oxford University Press.

Arnett, J. J. (2005). The developmental context of substance use in emerging adulthood. *Journal of Drug Issues, 35*, 235–254. doi:10.1177/002204260503500202.

Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1984). Drug use among young adults: The impacts of role status and social environment. *Journal of Personality and Social Psychology, 47*, 629–645. doi:10.1037/0022-3514.47.3.629.

Bachman, J. G., Wadsworth, K., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. (1997). *Smoking, drinking, and drug use in young adulthood: The impact of new freedoms and new responsibilities*. Hillsdale: Lawrence Erlbaum.

Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Bryant, A. L., & Merline, A. C. (2002). *The decline of substance use in young adulthood: Changes in social activities, roles, and beliefs*. Mahwah: Lawrence Erlbaum Associates.

Baer, J. S. (2002). Student factors: Understanding individual variation in college drinking. *Journal of Studies on Alcohol, 14*, 40–53. doi:10.15288/jsas.2002.s14.40.

Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analysis. *Journal of School Psychology, 48*, 5–37. doi:10.1016/j.jsp.2009.10.001.

Beck, K. H., Thombs, D. L., Mahoney, C. A., & Fingar, K. M. (1995). Social context and sensation seeking: Gender differences in college student drinking motivations. *International Journal of the Addictions, 30*, 1101–1115. doi:10.3109/10826089509055830.

Beck, K. H., Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., & Wish, E. D. (2008). Social context of drinking and alcohol problems among college students. *American Journal of Health Behavior, 32*, 420–430. doi:10.5993/AJHB.32.4.9.

Beck, K.H., Caldeira, K.M, Vincent, K.B. & Arria, A.M. (2013). Social contexts of drinking and subsequent alcohol use disorder among college students. *American Journal of Drug and Alcohol Abuse, 39*, 38–43. doi: 10.3109/00952990.2012.694519 .

Bowers, J., Segrin, C., & Joyce, N. (2016). The role of transitional instability, psychological distress, and dysfunctional drinking in emerging adults' involvement in risky sex. *Journal of Social and Personal Relationships, 33*, 1097–1119. doi:10.1177/0265407515617621.

Christie-Mizell, C. A., & Peralta, R. L. (2009). The gender gap in alcohol consumption during late adolescence and young adulthood: Gendered attitudes and adult roles. *Journal of Health and Social Behavior, 50*, 410–426. doi:10.1177/002214650905000403.

Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment, 6*, 117–128. doi:10.1037/1040-3590.6.2.117.

Gabel, P. C., Noel, N. E., Keane, T. M., & Lisman, S. A. (1980). Effects of sexual versus fear arousal on alcohol consumption in college males. *Behaviour Research and Therapy, 18*, 519–526. doi:10.1016/0005-7967(80)90044-3.

Galambos, N. L., & Tilton-Weaver, L. C. (2000). Adolescents' psychosocial maturity, problem behavior, and subjective age: In search of the adultoid. *Applied Developmental Science, 4*, 178–192. doi:10.1207/S1532480XADS0404_1.

Gotham, H., Sher, K., & Wood, P. (2003). Alcohol involvement and development task completions during young adulthood. *Journal of Studies on Alcohol, 64*, 32–43. doi:10.15288/jsa.2003.64.32.

Graber, J. A., & Brooks-Gunn, J. (1996). Transitions and turning points: Navigating the passage from childhood through adolescence. *Developmental Psychology, 32*, 768–776. doi:10.1037/0012-1649.32.4.768.

Hays, R. D., & DiMatteo, R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment, 51*, 69–81. doi:10.1207/s15327752jpa5101_6.

Jasinski, J. L., & Ford, J. A. (2007). Sexual orientation and alcohol use among college students: The influence of drinking motives and social norms. *Journal of Alcohol and Drug Education, 51*, 63–82.

Kandel, D. B. (1980). Drug and drinking behavior among youth. *Annual Review of Sociology, 6*, 235–285. doi:10.1146/annurev.so.06.080180.001315.

Kirst, M., Mecredy, G., & Chaiton, M. (2014). Predictors of substance use among young adults transitioning away from high school: A narrative review. *Substance Use & Misuse, 49*, 1795–1807. doi:10.3109/10826084.2014.933240.

Krohn, M. D., Lizotte, A. J., & Perez, C. M. (1997). The interrelationship between substance use and precocious transitions to adult statuses. *Journal of Health and Social Behavior, 38*, 87–103. doi:10.2307/2955363.

Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review, 25*, 841–861. doi:10.1016/j.cpr.2005.06.002.

Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2006). Who drinks and why? A review of socio-demographic, personality, and contextual issues behind the drinking motives in young people. *Addictive Behaviors, 31*, 1844–1857. doi:10.1016/j.addbeh.2005.12.028.

Lewis, J. E., Míguez-Burbano, M. J., & Malow, R. M. (2009). HIV risk behavior among college students in the United States. *College Student Journal, 43*, 475–491.

Li, Q., Wilsnack, R., Wilsnack, S., & Kristjanson, A. (2010). Cohabitation, gender, and alcohol consumption in 19 countries: A multilevel analysis. *Substance Use & Misuse, 45*, 2481–2505. doi:10.3109/10826081003692106.

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*, 1198–1202. doi:10.1080/01621459.1988.10478722.

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: Guilford Press.

National Center for Education Statistics. (2013). *Graduation rates*. Department of Education: Retrieved from the U.S http://nces.ed.gov/fastfacts/display.asp?id=40.

Pampel, F. C., Mollborn, S., & Lawrence, E. M. (2014). Life course transitions in early adulthood and SES disparities in tobacco use. *Social Science Research, 43*, 45–59. doi:10.1016/j.ssresearch.2013.08.005.

Pandina, R. J., Labouvie, E. W., & White, H. R. (1984). Potential contributions of the life span developmental approach to the study of adolescent alcohol and drug use: The Rutgers health and human development project, a working model. *Journal of Drug Issues, 14*, 253–268.

Raffaelli, M., Torres Stone, R. A., Iturbide, M. I., McGinley, M., Carlo, G., & Crockett, L. J. (2007). Acculturation, gender, and alcohol use among Mexican American college students. *Addictive Behaviors, 32*, 2187–2199. doi:10.1016/j.addbeh.2007.02.014.

Sandberg-Thoma, S. E., Snyder, A. R., & Jang, B. J. (2015). Exiting and returning to the parental home for boomerang kids. *Journal of Marriage and Family, 77*, 806–818. doi:10.1111/jomf.12183.

Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol and Drugs, Suppl., 14*, 54–70.

Schulenberg, J. E., Bryant, A. L., & O'Malley, P. M. (2004). Taking hold of some kind of life: How developmental tasks relate to trajectories of well-being during the transition to adulthood. *Development and Psychopathology, 16*, 1119–1140. doi:10.1017/0S0954579404040167.

Staff, J., Schulenberg, J. E., Maslowsky, J., Bachman, J. G., O'Malley, P. M., Maggs, J. L., & Johnson, L. D. (2010). Substance use changes

and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Development and Psychopathology, 22*, 917–932. doi:10.1017/S0954579410000544.

Stanley, S. M., Rhoades, G. K., & Fincham, F. D. (2011). Understanding romantic relationships among emerging adults: The significant roles of cohabitation and ambiguity. In F. D. Fincham & M. Cui (Eds.), *Romantic relationships in emerging adulthood* (pp. 234–251). New York: Cambridge University Press.

Stice, E., Myers, M. G., & Brown, S. A. (1998). Relations of delinquency to adolescent substance use and problem use: A prospective study. *Psychology of Addictive Behaviors, 12*, 136–146. doi:10.1037/0893-164X.12.2.136.

Timberlake, D. S., Hopfer, C. J., Rhee, S. H., Friedman, N. P., Haberstick, B. C., Lessem, J. M., & Hewitt, J. K. (2007). College attendance and its effect on drinking behaviors in a longitudinal study of adolescents. *Alcoholism: Clinical and Experimental Research, 31*, 1020–1030. doi:10.1111/j.1530-0277.2007.00383.x.

Todd, F. L. (2006). Discriminating among levels of college student drinking through an Eriksonian theoretical framework. *Journal of Additions & Offender Counseling, 27*, 28–35. doi:10.1002/j.2161-1874.2006.tb00016.x.

Turner, R. J., & Lloyd, D. A. (2004). Stress burden and the lifetime incidence of psychiatric disorder in young adults: Racial and ethnic contrasts. *Archives of General Psychiatry, 61*, 481–488. doi:10.1001/archpsyc.61.5.481.

Wilbum, V. R., & Smith, D. E. (2005). Stress, self-esteem, and suicidal ideation in late adolescents. *Adolescence, 40*, 33–45.

Windle, M., & Zucker, R. A. (2010). Reducing underage and young adult drinking: How to address critical drinking problems during this developmental period. *Alcohol Research & Health, 33*, 29–44.

Yamaguchi, K., & Kandel, D. B. (1985). On the resolution of role incompatibility: A life event history analysis of family roles and marijuana use. *American Journal of Sociology, 90*, 1284–1325. doi:10.1086/228211.