

Emerging Adulthood: Internal Markers of Adulthood and Alcohol Use

by

Kristen L. Hannum

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
MASTER OF ARTS IN PSYCHOLOGY  
Department of Psychology  
College of Arts and Sciences:  
University of South Florida St. Petersburg

Major Professor: Michiko Otsuki Clutter, Ph.D.  
Mark Pezzo, Ph.D.  
Christina Salnaitis, Ph.D.

Date of Approval:  
March 17, 2015

Keywords: binge drinking, external markers, identity theory, development, risk

Copyright © 2015, Kristen L. Hannum

## Table of Contents

List of Tables .....	iv
List of Figures.....	v
Abstract.....	vi
Emerging Adulthood: Internal Markers of Adulthood and Alcohol Use.....	1
Internal Markers.....	5
Alcohol Use.....	9
Current Study.....	14
Methods.....	16
Data Collection and Design.....	16
Apparatus.....	16
Power.....	17
Population.....	17
Core sample.....	17
Current analytic sample.....	18
Measures.....	18
External markers.....	18
Internal markers.....	19
Alcohol consumption .....	21
Sociodemographic variables.....	21
Plan of Analysis.....	22
Results.....	23
Sample Demographics.....	23

Prevalence of Alcohol Use.....	23
Rate of Alcohol Use into Young Adulthood.....	25
Relationship between Adulthood Markers and Alcohol Use.....	25
Multivariate analyses.....	26
Mediation.....	27
Sobel test.....	27
Discussion.....	28
Strengths.....	32
Limitations.....	32
Conclusion.....	33
References.....	35
Appendix A: External Markers of Adulthood.....	43
Marital Status.....	43
Parenthood.....	43
Employment.....	43
Appendix B: Internal Markers of Adulthood.....	46
Financial Responsibility.....	46
Decision Making.....	47
Financial Independence.....	49
Appendix C: Alcohol Use.....	51
Dependent Measure in 2011.....	51
Other Measures of Alcohol Use.....	51
Appendix D: Sociodemographic Information.....	53
Gender.....	53
Age.....	53

Race/Ethnicity.....	53
Parental Education.....	55
Appendix E: Table 1A.....	56
Appendix F: Table 2A.....	57
Appendix G: Table 3A.....	58
Appendix H: Table 4A.....	59
Appendix I: Table 5A.....	60
Appendix J: Table 6A.....	61
Appendix K: Table 7A.....	62
Appendix L: Table 8A.....	63

## **List of Tables**

Table 1: Demographic Variables ( $N=515$ ).....	24
Table 2: Frequencies for Race/Ethnicity and External Markers ( $N=515$ ).....	24

## **List of Figures**

Figure 1: Internal Markers as a Mediator between External Markers and Drinking Frequency in 2011.....	16
Figure 2: Financial Independence as a Mediator between Parenthood and Drinking Frequency in 2011.....	28

## **Abstract**

Emerging adulthood is the developmental period of transition between adolescence and adulthood. This period is widely associated with identity exploration as well as risk behaviors, such as alcohol use. As alcohol use is at its highest point during emerging adulthood, developmental patterns of use are also known to substantially decrease by the end of the transition. External markers of adulthood (marital status, parenthood, and career) are recognized markers of the transition and have been associated with alcohol use decline. The current study first establishes the importance of internal markers (responsibility, decision making, and financial independence) in recognizing adulthood. Research suggests that higher internal achievement is representative of successful navigation of development and will be predictive of lower alcohol use. This relationship between both external and internal markers of adulthood and alcohol use was analyzed using two waves of data from the Panel Study of Income Dynamics (PSID): Transition to Adulthood questionnaire (TA). External and internal markers were investigated as potential predictors of frequency of alcohol consumption and binge drinking status between early emerging adulthood (ages 18-21) and late emerging adulthood (ages 24-27). Results suggest that parenthood and financial independence are predictive markers of the frequency of alcohol consumption in late emerging adulthood. Financial independence approaches significance as a partial mediator between parenthood and drinking frequency. No markers have been concluded to be predictive of binge drinking status. These markers may be used to construct preventative programs and interventions to reduce negative behavioral outcomes associated with drinking.

## **Emerging Adulthood: Internal Markers of Adulthood and Alcohol Use**

Emerging adulthood is the transitional period of the lifespan when young adults adjust to their roles as autonomous members of society (Arnett, 2000; Arnett, 2005). The period of emerging adulthood is defined as between the ages 18 and 25 (Arnett, 2005). Young adulthood begins at age 26 and continues through the age of 33 (Arnett, 2005). Many important changes happen during emerging adulthood. From the time emerging adults reach legal adult age through their early twenties, they often move out of the parental home, begin to work, and start to become financially independent (Arnett, 2007). This period is commonly associated with educational and occupational pursuits, experimentation, identity formation, and adulthood socialization (Arnett, 2007; Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). It can be a stressful time. Amidst all of the changes, old and new relationships exert pressure on emerging adults to establish a functional identity (Arnett, 2007; Cote & Levine, 1987). Emerging adults commonly participate in risky and reckless behaviors, such as alcohol and drug use (Bradley & Wildman, 2002; Kandel & Logan, 1984; Nelson & Barry, 2005). Transitioning adults explore their newfound independence through experimentation with new behaviors and identities, before committing to the responsibilities of young adulthood (Arnett, 1994; Arnett, 2000; Bradley & Wildman, 2002).

The traditional perception that life occurs in stages is embedded within life course theory (Hartmann & Swartz, 2007). Greene, Wheatley, and Aldava IV (1992) conducted interviews with young adults and reported that individuals tended to describe their life



using references of specific developmental stages such as childhood, adolescence, and young adulthood. Not as common was participant marking of transitions with references to specific life events or developmental milestones, like learning to drive. Although much adulthood development may be generalized to other cultures, debate has centered on the ability to generalize emerging adulthood as a developmental stage to other cultures (Arnett, 1998; Nurmi, 1997). Emerging adulthood only manifests itself when adolescents are able to take their time to explore their own courses of action, as opposed to adopting a pre-arranged role or being immediately burdened with economic obligations.

Emerging adulthood has been described as the period when identity formation ends (Arnett, 2004; Cote & Levine, 1987). Becoming competent, in the domains of “autonomy, identity, and intimacy,” is related to the perception of being an adult (Galambos, Turner, & Tilton-Weaver, 2005, p. 506). For example, in a sample of 190 university students, higher psychosocial maturity predicted the self-reporting of an older self-perceived age (Galambos et al., 2005). However, an emerging adult may be hesitant to pursue a singular path. Identity exploration is viewed as the central task of emerging adulthood, (Arnett, 2005; Cote & Levine, 1987; Grotevant & Adams, 1984; Schulenberg et al., 1996). Developing relationships at work and in romantic life are identified as emerging tasks within this developmental period. Maturation of these relationships later becomes the central task of young adulthood. (Roisman, Masten, Coatsworth, & Tellegen, 2004).

As Marcia (1980) described, identity formation is multidimensional. Commitment to sexual identity, occupational identity, and moral identity are all required for the development of a functioning adult role. The theory of identity status, first posed

by Marcia (1966), suggests that identity formation fluctuates between higher and lower levels of commitment. Identity status classifications include achievement, moratorium, diffusion, and foreclosure (Marcia, 1966). A status of diffusion characterizes an unglued identity that lacks commitment; a status cemented with unwavering commitment is labeled foreclosure. Moratorium denotes identity exploration with adjusting commitments; an achievement status is reached when commitments are made after viable options are explored (Marcia, 1966).

Often, individuals are either consistently successful or unsuccessful across developmental tasks (Fadjukoff, Kokko, & Pulkkinen, 2007; Marcia, 1966; Marcia, 1980; Waterman, 1982). In a review of studies researching identity status, Waterman (1982) found that that an individual identified as being in the diffusion or foreclosure status during college was likely to receive the same classification six to seven years later. Alternatively, college students classified as in achievement or moratorium status were only half as likely to receive the same classification years later. These statuses, however, are characteristic of typical development. Marcia (1980) noted that it is not uncommon for young adults to alternate between achievement and moratorium statuses continuously throughout the life course. In another study, Roisman et al. (2004) conducted structured interviews with 205 individuals in adolescence, at age 20, and again at age 30, and found that success in the developmental tasks of adolescence later predicted success in the tasks of young adulthood.

As developmental foci shift, the question then arises; at what point does a person become an adult? How should we define adulthood? Sociologists like Hartman & Swartz (2007) argued for the importance of external markers to identify its onset.

External markers denote characteristic role transitions such as becoming a parent, getting married, finishing school, and establishing a career. Hartman and Swartz (2007) maintained that external markers are involved in the recognition of the transition when viewed *retrospectively* by young adults in detailed interviews. Fadjukoff and et al. (2007) conducted a prospective study of 159 Finns who were interviewed at ages 27, 36, and 42. They sought to evaluate the relationships between identity status, self-perceived adulthood, and external markers of adulthood. Timing of external markers varied substantially between participants but peaks in these markers occurred in waves. Results suggested that self-perception of adulthood and external markers were not related. Nor were external markers associated with an achieved identity status. Rather a longer time spent in exploration was a salient precursor to an identity achievement status. Finally, the earlier onsets of external markers, such as parenthood, were associated with lower identity achievement. This may mean that the premature onset of an external marker may disrupt identity development. Interestingly, self-perception of adulthood by women was related to the accomplishment of an achievement status (Fadjukoff et al., 2007).

Current research suggests that external markers are not representative of emerging adults' self-perception of an adulthood status. Arnett (2001) found that external markers, such as finishing school, marital status, and parenthood, were the least relevant markers of emerging adults' self-perception of adulthood. In fact, only 9-13% of the sample of 546 adolescents and emerging adults selected these markers to be representative of adulthood.

## **Internal Markers**

Emerging adults advocate for internal markers, or feelings of adulthood as expressed in behavior, as the meaningful criteria for defining their own adulthood (Arnett, 2001, Arnett, 2005; Nelson & Barry, 2005). Research supports the subjective measurement of adulthood based on internal markers because many legal adults do not feel like adults (Arnett, 2001; Arnett, 1994; Facio & Micocci, 2003; Fadjukoff et al., 2007; Nelson & Barry, 2005). Arnett (2001) presented questionnaires to 171 adolescents (ages 13-19), 179 emerging adults (ages 20-29), and 165 young adults (ages 30-35). Only 86% of young adults, 46% of emerging adults, and 19% of adolescents considered themselves to be adults. Participants were instructed to identify the necessary achievements before “a person can be considered an adult” (Arnett, 2001, p. 135). Young adults were significantly less likely than adolescents to select biological markers, such as attaining full growth and the ability to have children, to define adulthood. Young adults were also significantly more likely than adolescents to select behavior that complies with norms as critical criteria (Arnett, 2001).

In essence, behaving like an adult makes one an adult. Facio and Micocci (2003) instructed 163 emerging adults in Argentina, participants in a longitudinal study since the age of 15, to rank criteria necessary for adulthood, and to indicate whether or not they considered themselves to be adults. Forty-six percent of young adult Argentinians identified themselves as adults, whereas 45% of the sample believed themselves to be adults in some aspects but not in others. The ability to care for oneself, the ability to care for a family, and compliance with behavioral norms were ranked higher than role transitions in defining adulthood. Culturally, conclusions established that emerging

adulthood existed as a developmental stage for Argentinean youth in their mid-twenties (Facio & Micocci, 2003).

Emerging adults agree on internal markers for adulthood. Nelson and Barry (2005) asked 232 U.S. college students (ages 18 to 25) to rank criteria for adulthood. Participants were asked to report demographic information, to self-report their own achievement of adulthood status, risk behaviors, and incidences of depression. The researchers reported that 25% of their sample believed themselves to be an adult, 69% believed themselves to be an adult in some aspects but not in others, and 6% did not consider themselves to be adults at all. The researchers then divided the emerging adults into two groups: perceived adults and perceived emerging adults. Perceived adults qualified as emerging adults based on age but considered themselves to have reached adulthood. Perceived emerging adults also qualified as emerging adults but recognized that they were still transitioning or were not yet adults. There was no significant difference between the groups in the criteria they selected to determine adulthood. Both the perceived adults and the emerging adults agreed on the selected criteria. Perceived adults believed themselves to be more successful in meeting the criteria than the perceived emerging adults did. Perceived adults also reported significantly less substance use and reported lower levels of depression than the perceived emerging adults in the study.

A consistent theme throughout the literature is the endorsement of individualism as a characteristic of internal markers (Arnett, 2001). Research consistently supports the acceptance of responsibility, the ability to make independent decisions, and financial independence as the most prominent criteria for achieving adulthood (Arnett, 2007;

Arnett, 2001; Fadjukoff et al., 2007; Molgat, 2007; Nelson & Barry, 2005; Greene et al., 1992). For example, Arnett (1994) used two questionnaires to survey 346 college students (ages 18 to 21) to discern the criteria they used to define adulthood including external, cognitive, emotional, biological, and behavioral markers. Examples of criteria included “buying a house,” to “decide on beliefs and values independently,” and “to avoid becoming drunk” (Arnett, 1994, p. 216). A majority, 70% of the sample believed that accepting responsibility, making decisions, demonstrating financial independence, and establishing an equal relationship with parents were criteria essential to adulthood. In contrast, external markers of adulthood like marital status, parenthood, and career selection were chosen by only 20% of the sample (Arnett, 1994). These results were replicated by Arnett (2001).

Accepting responsibility has been contextualized as “accepting responsibility for the consequences of [one’s] actions” (Arnett, 2001, p. 137). Adult obligations and responsibilities may include establishing a residence, raising a family, and obtaining an education or a career (Arnett, 1998). Molgat (2007) distinguishes between two types of responsibility: toward the self and towards others. In this light, responsibility toward the self is designated as financial and most relevant to emerging adults who are working to become financially independent. Molgat (2007) found the primary reason cited for not qualifying oneself as an adult centered around not having enough responsibilities in their lives (i.e. children, a job, paying bills). Responsibility toward others was recognized as individuals’ acceptance of their role as a parent, a family member, and/or an employee. This responsibility becomes more relevant toward the end of the transition in young adulthood after social roles have been established (Roisman et al., 2004).

The ability to make decisions has been viewed as making decisions independently of parents, after having developed decision-making competence (Fadjukoff et al., 2007; Green et al., 1992; Halpern-Felsher & Cauffman, 2001). Defining the intricacies of decision-making competency continues to be debated in the literature (e.g. Del Missier, Mäntylä, & Bruin, 2012; Halpern-Felsher & Cauffman, 2001; Parker & Fischhoff, 2005). It has been associated with using and applying information in problem solving tasks, as well as other aspects of executive, or higher order, function (Del Missier et al., 2012). Demonstrating the importance of decision making as an internal marker, Halpern-Felsher & Cauffman (2001) found that adults were more likely than adolescents to use advanced problem solving abilities by considering alternative solutions and suggesting consultation. These skills are essential to the independent young adult who no longer relies on their parent as a resource to make decisions. Jablonski and Martino (2013) observed through a qualitative questionnaire that parents reported difficulty in letting their children make their own decisions. Parents often reported that they would discuss important decisions with their emerging adult before he or she began to assume full control of this function in his or her life. Once an emerging adult has developed these skills, however, they may begin to make decisions independently from their parents.

Financial independence was viewed as generating income autonomously to meet financial obligations and to support an independent lifestyle (Jablonski & Martino, 2013; Molgat, 2007). In one study, parents reported that their emerging adults freely desired financial independence and were motivated to find their own financial resources (Jablonski & Martino, 2013). Fadjukoff and colleagues (2007) defined financial independence as having started full time employment (p. 507). Moving out of the

household often served as a marker that emerging adults would become more financially responsible and in turn, independent (Jablonski & Martino, 2013; Molgat, 2007). The primary criterion for financial independence is not receiving assistance from an external source, like parents or relatives.

### **Alcohol Use**

Emerging adulthood is a period plagued by vulnerability to drugs and alcohol exposure and initiation of use (Bachman et al., 2002; Bradley & Wildman, 2002; Cote & Levine, 1987; Tucker, Ellickson, Orlando, Martino, & Klein, 2005). As alcohol use has been related to identity exploration and a feeling of being in-between social roles, rates of alcohol use are highest in emerging adulthood (Arnett, 2007; Bradley & Wildman, 2002; Grotevant & Adams, 1984; Kandel & Logan, 1984). Drinking alcoholic beverages is accepted, and even encouraged, as a social norm for this age group by older adults and peers (Arnett, 2005; Bachman et al., 2002; Bradley & Wildman, 2002; Pedersen & von Soest, 2013). For example, Kandel and Logan (1984) reported that 95 percent of New York adolescents had used alcohol at some point by age 18. Emerging adulthood exhibits the highest rates of risk behaviors of the entire lifespan (Bachman et al., 2002; Kandel & Logan, 1984). A survey of drug use behavior revealed that the use of alcohol, marijuana, and cigarettes remained high for all emerging adults--even when controlling for factors like academic status (White, Labouvie, & Papadaratsakis, 2005).

Drinking is so common among emerging adults that physicians do not frequently advise young adults of the risks related to heavy drinking (Hingson, Heeren, Edwards, & Saitz, 2012). Bradley and Wildman (2002) attempted to find predictive psychosocial



influences that affect the likelihood that emerging adults will participate in risky or reckless behavior. Risk behaviors were “adventurous” behaviors, while reckless behaviors included harmful behaviors like alcohol and drug use (Bradley & Wildman, 2002, p. 262). Three hundred and eighty participants completed a four-part questionnaire including sensation seeking measures, social desirability measures, a peer pressure scale, and measurements of risk and reckless behavior. Researchers concluded that peer pressure was predictive of reckless behaviors—and supported drinking as a social norm. In comparison, higher scores on the sensation seeking measure were predictive of risky behaviors.

Schulenberg, Maggs, and Hurrelman (1997) discussed four models of health risk behavior that relate to substance use patterns of emerging adulthood in the developmental transition. The first model highlighted health risk behavior as a style of coping--a simple consequence of a normal transition. Model Two proposed that health risk behaviors result from a mismatch between life experience and personality. The third model posited that health risk behavior helps to negotiate identity experimentation, the development of autonomy, and the establishment of social goals. Finally, the fourth model promoted that the expression of health risk behavior is a result of success or failure in negotiating the transition (Schulenberg et al., 1997). An emerging adult who fails to successfully develop psychosocial skills will also fail in other relevant domains and is more likely to exhibit a greater pattern of risk behavior.

Arnett (2005) matched the four categories of the identity status model with high/low levels of exploration and commitment. These combinations were then hypothesized to be predictive of substance use patterns. Individuals in the achievement

status exhibit high levels of exploration and high commitment, while individuals in diffusion exhibit low levels of exploration levels and commitment levels. Individuals in the moratorium status exhibit high levels of exploration, but exhibit lower levels of commitment. Finally, foreclosed individuals exhibit low exploration levels and high commitment levels (Arnett, 2005). Emerging adults in the exploratory moratorium status are likely to experiment with alcohol. It is also likely that emerging adults in the diffusion status will have high rates of alcohol use because of their difficulty in establishing an identity (Arnett, 2005; Marcia, 1980). An emerging adult with either an achieved or foreclosed status would be expected to exhibit lower rates of alcohol use than either a moratorium or diffusion status as they have already established an adult identity. In both the normative and dysfunctional identity status classifications, high rates of alcohol use are expected. Both Arnett's (2005) model and the Schulenberg et al. (1997) model suggest that it is natural for emerging adults to exhibit higher risk behavior during the transition.

Stress has been associated with a greater frequency of alcohol use. Blomeyer and colleagues (2011) investigated if the age of first drink and stress levels predicted alcohol use behavior in emerging adulthood. They discovered that teenagers who began drinking at an early age, who were also exposed to high levels of stress, reported an increase in alcohol consumption in their early twenties. Common stressors are then aggravated by factors related to the transition including social pressures, increased commitment to relationships (Montgomery, 2005), and stress leading to the instability of this developmental period (Schulenberg et al., 1996). These stressors are commonly experienced during the period of transition and exacerbate problematic drinking patterns.

Alcohol use can result in addiction, emotional dysfunction, poor life outcomes, and even death (Schulenberg & Maggs, 2002; Tucker et al., 2005). In 2012, the National Survey on Drug Use and Health reported that 22.2 million people, ages 12 and older, were considered to be addicted to substances in the United States (Mental Health Services Administration, 2012). Alcohol use is associated with poor behavioral outcomes such as teen pregnancy, not completing school, and premature independence (Krohn, Lizotte, & Perez, 1997). Binge drinking has been related to poor health outcomes and an understanding of alcohol use patterns has become a primary concentration of health and developmental research (Pedersen & von Soest, 2013). Binge drinking has also been related to the likelihood of an elevated risk of injury (Kuntsche & Gmel, 2013). Goudriaan, Greken, and Sher (2007) supported these associations as they connected stable high binge drinking with poor decision making abilities on the Iowa Gambling Task, a task simulating real-life decision making skills. In the same study, researchers highlighted a possible relationship between age at first drink and binge drinking behavior. As a result of health concerns related to heavy alcohol use, Patrick, Wightman, Schoeni, and Schulenberg (2012) have labeled the need to investigate risk and protective factors into the increased substance use of emerging adulthood as a “primary health focus” (p. 772). Research in this area will help inform the development of preventative programs and interventions for alcohol use.

Schulenberg and colleagues (1996) analyzed four waves of the longitudinal project, Monitoring the Future, for binge drinking patterns. Researchers identified six trajectories of binge drinking to include: “Never, Rare, Chronic, Decreased, Increased, and Fling” (p. 289). Chronic binge drinkers had the most difficulty adjusting to adult

responsibilities and were the least likely to decrease alcohol consumption after fully adopting an adult role. Individual differences during this adjustment period may explain the wide variation in behavior (Schulenberg et al., 1996). Researchers asserted that these patterns were reflective of the ability to navigate the transition to adulthood, as well as sociodemographic patterns. Using analysis of panel wave data, Patrick et al. (2012) found that a higher socioeconomic status in childhood was predictive of frequent drinking patterns in emerging adulthood. To continue, higher wealth (defined as the total value of all owned material goods and assets) for those age 23 or older, was predictive of binge drinking. Parental behavior also influenced patterns of drinking in emerging adults. Pedersen and von Soest (2013) found that parental binge drinking patterns and drinking frequency were both predictive of a participant's propensity towards binge drinking.

Alcohol use abruptly declines in late emerging/young adulthood (Bachman et al., 2002; Barnes, Welte, & Dintcheff 1993). The behavior becomes even less frequent at the end of emerging adulthood. The risk of encountering or using substances declines substantially after age 24 (Bachman et al., 2002; Barnes et al., 1993; Kandel & Logan, 1984; Schulenberg et al., 1996). Research links the increased constraints on roles, as with marriage, parenthood, and full-time employment, to a lower frequency of use (Bachman et al., 2002; Kandel & Logan, 1984). For example, White et al. (2005) found that individuals who attended college were less likely to drink alcohol frequently at age 30 than their peers who did not attend college. Reasons for the decline are thought to be related to the restriction of access to alcohol, like the inability to go out on the weekend, or adherence to the cultural norms for adult behavior (Bachman et al., 2002). Could this

rapid decline of alcohol consumption be associated with internal compliance to behavioral norms associated with adulthood?

While research has connected external markers with alcohol use decline (Bachman et al., 2002; Barnes et al., 1993; Kandel & Logan, 1984), there is minimal literature that evaluates the relationship between internal markers of adulthood and alcohol use holistically (Schulenberg et al., 1996). This research will serve to further validate the importance of internal markers in defining adulthood (Nelson & Barry, 2005; Arnett, 2001). It will also determine if external or internal markers of adulthood can be associated with alcohol use. Understanding risk and protective factors of alcohol usage is greatly needed as new developments may help to inform preventative health programs and interventions (Patrick et al., 2012; Schulenberg & Maggs, 2002).

### **Current Study**

This study evaluated the relationship between external and internal markers of adulthood in early emerging adulthood (ages 18-21) and rates of alcohol use in late emerging adulthood (ages 24-27) through the analysis of secondary data obtained from the Panel Study of Income Dynamics (PSID): Transition to Adulthood (TA) supplement. To replicate previous findings that alcohol use decreased at the end of the transition (Bachman et al., 2002; Barnes et al., 1993; Kandel & Logan, 1984), Hypothesis One stated that alcohol use would decrease from 2005 to 2011.

Based on inferences that associated external markers with restricted recreational activities (Bachman et al., 2002), the presence of external markers was expected to predict lower substance use rates. In representation of normative and maladaptive

drinking behavior, Hypothesis Two posited that the presence of external markers in emerging adulthood would predict a) lower drinking frequency in late emerging adulthood and b) the absence of binge drinking behavior. The literature then suggested that higher scores for internal markers represented better adaptation to an adult identity (Arnett 2005; Fadjukoff et al., 2007; Nelson & Barry, 2005). High attainment of internal markers (responsibility, decision making, and financial independence) was assumed to be reflective of an identity achievement status. Thus, Hypothesis Three posited that higher scores for internal markers in emerging adulthood would predict a) lower levels of drinking frequency in late emerging adulthood and b) the absence of binge drinking behavior.

In the exploration of the relationship between internal markers, external markers, and alcohol use, a potential mediation was explored. As external markers were not associated with emerging adults' perception of adulthood and associated with substance use decline (e.g. Arnett, 2000; Bachman et al., 2002; Facio & Micocci, 2003; Nelson & Barry, 2005), internal markers were expected to possess a causal relationship with adulthood perception and therefore would be predictive of alcohol consumption (Baron & Kenney, 1986). Hypothesis Four proposed that internal markers would mediate the relationship between external markers of adulthood and alcohol frequency (See Figure 1). Sociodemographic information and baseline drinking behavior were expected to be predictive of drinking pattern behavior and were included as covariates in all regression analyses to control for extraneous factors.

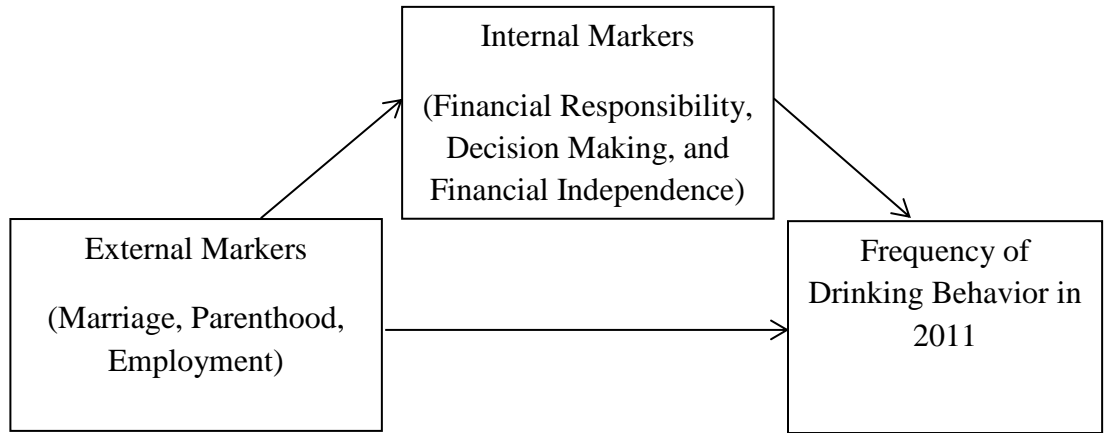


Figure 1: Internal Markers as a Mediator between External Markers and Drinking Frequency in 2011

## Methods

### Data Collection and Design

Secondary data was obtained from the PSID-TA supplement, a longitudinal questionnaire targeting emerging adults in the United States (PSID, 2013). According to the Institute for Social Research (2008, 2013), original data was collected over the telephone via structured interviews with the assistance of trained interviewers in 2005 and 2011. Participants received \$40 in 2005 and \$50 in 2011 as incentive for participation. Average interview length was 60.30 minutes in 2005 and 61.13 minutes in 2011. Data collection for all participants began in September of each respective year and ended in February.

**Apparatus.** Data, questionnaires, and user guides were downloaded from the PSID (2013) website. All data was de-identified and available to the public for free with

registration. The 2005 and 2011 PSID-TA waves were used to discern predictive associations between internal markers of adulthood and rates of alcohol consumption.

**Power.** G Power 3.1.9.2 was used to calculate adequate sample sizes for analyses (Faul, 2014). For a priori tests of linear multiple regression with a fixed model (deviation from zero), assuming a small effect size ( $\eta^2 \geq .02$ ; Cohen, 1992) to a power of .80, with three predictors, a total sample size of 550 was required. For a priori tests of logistic regression with a standard odds ratio to a power of .80, a total sample size of 568 was recommended. For a priori tests of analysis of variance (ANOVA), repeated measures with one group and two measurements, and a medium effect size ( $\eta^2 \geq .25$ ; Cohen, 1992), 34 participants were necessary.

## **Population**

**Core sample.** Original PSID participants were recruited in 1968 as a part of longitudinal study to understand socioeconomic effects on health and wellbeing with a nationally representative sample. Participants were selected using a systematic sampling of 2,930 nationally representative households as selected by the Survey Research Center at the University of Michigan and an oversampling of 1,872 low income households from the 1967 Survey of Economic Opportunity in 1968. The study adopted a self-replacing design as children of original participants eventually supplanted their parents as heads of household (PSID, 2013). As participants agreed to participate in a life-long study, there was a 96-98% response rate between waves (PSID, 2013). More information regarding the collection of original data is available in the PSID user guides (Institute for Social Research, 2008, 2013).



**Current analytic sample.** All participants of the TA supplement were 18-27 years of age, high school graduates, and participated previously in the PSID: Childhood Development Survey (Institute for Social Research, 2008). While all participants graduated from high school, not all participants enrolled in college. Participants lived in all regions of the United States, were male and female, and of varied racial and ethnic backgrounds. Of the original 2005 sample of 860 eligible participants, 745 individuals (86.6% response rate) agreed to participate. Primary reasons for nonresponse included refusal and inability to contact the individual (including incarceration or military service). Of the original 2011 sample of 2,083 eligible participants, 1,907 individuals (91.5% response rate) completed the interview. To be included in these analyses, participants must have participated in both the 2005 PSID-TA at age 18- 21 and the 2011 PSID-TA at age 24-27. Of the 622 individuals who participated in both 2005 and 2011, 553 were eligible to be included in these analyses. The primary reason for exclusion for this analysis was not satisfying the age range criterion for both 2005 and 2011 years. Of this eligible sample, only participants with complete data for all variables included in primary analyses were selected. The final analytic sample size included 515 participants (93.1% of eligible participants).

## **Measures**

**External markers.** External criteria of adulthood included marital status, parenthood, and full-time employment (Arnett, 2005; Fadjukoff et al., 2007). Marital status, parenthood, and career status were sorted into dichotomous variables (see Appendix A). Marital status was coded as married versus single, divorced, or widowed. Parenthood was coded as the presence or absence of children. Finally, career was coded

as the presence or absence of current employment. One straightforward question was used to ascertain whether a participant was married or a parent. Three questions were used to categorize a respondent as employed or unemployed. A respondent who reported to be currently working at least once, for any of the three employment questions asked, was considered employed. All other responses were coded as unemployed.

**Internal markers.** The original questionnaire, the PSID-TA supplement, was designed to target issues relevant to an emerging adult (Gouskova & Heeringa, 2008). The aim was to document the transition from adolescence to young adulthood by focusing on relevant economic, social, and emotional issues. Internal markers of adulthood status were conceptualized as the acceptance of financial responsibility, the ability to make decisions, and financial independence (Arnett, 2007; Arnett, 2001; Fadjukoff et al., 2007; Nelson & Barry, 2005; Greene et al., 1992). To measure internal markers, the researcher selected a subset of questions from the PSID-TA 2005 supplement with high face validity and matched context, as they related to responsibility, the ability to make decisions, and financial independence (Podsakoff, Podsakoff, MacKenzie, & Klinger, 2013). The literature supported the use of these constructs as measures of internal markers of adulthood (e.g. Arnett, 2001; Arnett, 2007; Fadjukoff et al., 2007; Nelson & Barry, 2005; Greene et al., 1992; Molgat, 2007). See Appendix B for the original questions used.

For all analyses, responsibility was operationalized as the acceptance of financial responsibility for tasks that enable self-sufficiency in daily life (Arnett, 2007; Molgat, 2007). Examples of adulthood tasks included earning a living, paying bills, and managing daily activities (Arnett, 2001). Responsibility was operationally defined as the

average of four Likert-style questions on a five point scale, at an interval level of measurement. The questions ranged from a scale of one (somebody else does this for me all of the time) to five (I am completely responsible for this all the time) and referenced earning a living, paying their rent, paying bills, and managing money. Possible scores ranged from one (representing low financial responsibility) to five (representing high financial responsibility). When questions were evaluated holistically, the measure of responsibility was considered to have good internal consistency ( $\alpha=.77$ ).

In this study, the ability to make decisions was operationalized as the ability to solve problems independently (Del Missier et al., 2012; Jablonski & Martino 2013; Molgat, 2007). The measure was comprised as the average of five Likert-style questions at an interval level of measurement. Two questions addressed self-perceived problem solving skills and responsibility for actions taken. These two items were based on a seven point scale from one (not at all well) to seven (extremely well). The next three questions addressed analytic thinking skills, decisiveness, and independence as compared to others. These items were based on a seven point scale from one (a lot worse than other people) to seven (a lot better than other people). Possible scores for average decision making skills ranged from one (representing poor decision making skills) to seven (representing high decision making skills). When questions were evaluated for reliability, the current measure of decision making skills rated average on internal consistency ( $\alpha=.67$ ).

Finally, financial independence was defined as earning a living without any assistance for expenses (Arnett, 2001; Jablonski & Martino, 2013; Molgat, 2007). Financial independence was measured dichotomously dependent upon number of

domains in which a respondent received assistance. These domains included receiving money for a house, rent, personal vehicle, tuition, expenses/bills, or a personal loan (Jablonski & Martino, 2013; PSID, 2013). As a dichotomous measurement, a score of zero denoted the receipt of assistance in up to six domains, while a score of one denoted no assistance in any domains—complete financial independence.

**Alcohol consumption.** To quantify alcohol consumption, frequency patterns and binge drinking patterns were used as dependent measures (see Appendix C). Frequency was operationalized as the regularity of the consumption of alcohol ranging from not at all (0) to every day (7). This dependent measure was normally distributed. Estimations were self-reported in 2005 and 2011. Binge drinking was defined as “drinking that leads to intoxication” (Pedersen & von Soest, 2013, p. 587). Binge drinking was operationalized as the consumption of five or more drinks for males and four or more drinks for females (PSID, 2013; Patrick et al., 2012). Defining binge drinkers by the number of drinks consumed was more effective in detecting problem drinking than the measurement of blood alcohol level (Fillmore & Jude, 2011). Binge drinking behavior was then dichotomized as the presence or absence of binge drinking in the past year.

**Sociodemographic variables.** To determine whether the frequency of alcohol use was more predictive than sociodemographic information, the variables of age, gender, race/ethnicity, and socioeconomic status (SES) were included in regression analyses. All original questions are included in Appendix D. For this study, early emerging adulthood was operationalized as ages 18-21, while late emerging adulthood was operationalized as ages 24-27. In all analyses, age at the time of the 2005 questionnaire was used. Gender was dichotomized as male or female. Four questions were used to categorize race. The

first question determined Hispanicity, while the three following questions determined racial groupings. Any individual who reported more than one racial grouping was categorized as “Other.” Any individual who affirmed Hispanicity and reported only one racial category was categorized as Hispanic/Latino.

To operationalize SES, the following procedure adopted by Patrick et al. (2012) was used. Maternal and paternal education levels were averaged together based on a ratio scale using years of education completed from one (less than high school completion) to 17 (postgraduate or professional school completion).

### **Plan of Analysis**

The current analysis used secondary data to analyze external and internal markers of adulthood as independent variables in 2005 and estimated alcohol use frequency and the presence/absence of binge drinking as the dependent variables in 2011. To address the first hypothesis, replication of previous findings that drinking behavior decreased at the end of the transition was tested with repeated measures ANOVAs for time for four drinking measures, including age as a covariate relationship. Then relationships between internal markers, external markers, and alcohol frequency were tested with bivariate correlations to support the performance of regression analyses. Next, to address Hypotheses Two and Three, the predictive associations between external markers and drinking frequency and between internal markers and drinking frequency were next assessed. These analyses were then repeated for binge drinking with logistic regressions. Regression analyses tested whether markers of adulthood were predictive of alcohol use in late emerging adulthood. Significant internal markers were tested as mediators

between external markers and drinking behavior using a series of multiple regression analyses as suggested by Hypothesis Four.

Throughout all analyses, racial categorization was divided dichotomously between majority ( $n = 240$ , 46.6%) of White and minority races to include all other non-White categories ( $n = 275$ , 53.4%). Being male, married, a parent, employed, financially independent, and a minority were all coded as one. The complement of each was coded as zero.

## **Results**

### **Sample Demographics**

Ages of emerging adults in the study ranged from 18 to 21 in 2005 and 24 to 27 in 2011. Both males ( $n = 239$ , 46.4%) and females ( $n = 276$ , 53.6%) were included in these analyses. In relation to the external markers, only a minor number of participants were parents ( $n = 73$ , 14.2%) or married ( $n = 17$ , 3.3%). The numbers of employed and unemployed participants were about even. Tables 1 and 2 provide a demographic summary including age, income, gender, external markers, and racial/ethnic information.

### **Prevalence of Alcohol Use**

In 2005, 61.9% of the sample confirmed that they drank alcohol versus 76.1% in 2011. In 2005, 43.5% of the sample reported that they participated in binge drinking at least once in the past year, while 53.2% of participants in 2011 made the same claim. In 2005, 1.2% of participants reported drinking every day and 2.1% of participants reported daily consumption in 2011. One participant in 2005 was diagnosed with alcohol dependency and none reported dependency in 2011. The average number of days that a

Table 1: Demographic Variables ( $N=515$ )

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Age in 2005		19.16	0.93	18	21
Age in 2011		25.16	0.92	24	27
Maternal education		12.00	4.25	0	17
Paternal education		10.34	5.85	0	17
Average Parental Education		11.17	4.07	0	17
Total Family Income (2004)		76209.38	80934.77	365	1247797
Total Family Income (2010)		52018.04	48422.21	0	292500
Total Earnings (2004) **	476	2987.10	5744.08	0	45000
Total Earnings (2011) **	386	17335.53	1721.32	0	170000

\*\*Total Earnings in 2004 ( $n=476$ ) and 2005 ( $n=386$ ) were calculated as the sum earnings of up to up to five reported jobs.

Table 2: Frequencies for Race/Ethnicity and External Markers ( $N=515$ )

Race/Ethnicity	<i>n</i>	<i>%</i>	External Markers	<i>n</i>	<i>%</i>
White	240	46.60	Male	239	46.41
Black/African-American	213	41.36	Female	276	53.59
Asian	5	0.97	Employed	280	54.37
Hispanic/Latino	43	8.35	Unemployed	235	45.63
Other (Mixed-race etc.)**	14	2.72	Married	17	3.30
			Single	498	96.70
			Parent	73	14.17
			Not Parent	442	85.83

\*\*Other includes American Indian, Native Hawaiian, Other, and Mixed-Race groupings.

participant reported binge drinking decreased from 13.00 in 2005 to 10.28 in 2011.

Please see Table 1A in Appendix E for a summary of descriptive statistics for alcohol consumption in both 2005 and 2011.

### **Rate of Alcohol Use into Young Adulthood**

Four repeated measures ANOVAs compared the difference between reports of average drinking behaviors at two time points, and included age as a covariate (see Table 2A in Appendix F). There was a significant difference for the effect of time, as frequency of drinking increased from 2005 ( $M = 1.77, SE = 0.08$ ) to 2011 ( $M = 2.36, SE = 0.08$ ). The number of drinks per drinking occasion was comparable between 2005 ( $M = 2.44, SE = 3.10$ ) and 2011 ( $M = 2.29, SE = 2.41$ ), although the number of binge drinkers substantially increased from 2005 ( $M = 0.44, SE = 0.02$ ) to 2011 ( $M = 0.53, SE = 0.02$ ). Finally, there was also a significant difference for the effect of time, including age as a covariate, as the number of days of reported binge drinking decreased from 2005 ( $M = 13.00, SE = 41.08$ ) to 2011 ( $M = 10.28, SE = 38.65$ ).

### **Relationship between Adulthood Markers and Alcohol Use**

To investigate the relationship between external markers, internal markers, and drinking frequency, a series of bivariate correlations were performed among all key study variables (see Table 3A in Appendix G). For external markers, marital status was positively associated with parenthood and financial independence but negatively associated with race as minority. Parenthood was positively correlated with responsibility, decision making, financial independence, age, and race as minority. Parenthood was negatively associated with being male and parental education. The third



external marker, employment, was noted to be positively associated with responsibility and financial independence.

For internal markers of adulthood, a significant positive correlation existed between responsibility, decision-making, and financial independence. There were also significant positive associations between responsibility, being male, and age. Decision making and financial independence were positively correlated with race as minority and age. Of importance, drinking frequency in 2011 was negatively associated with race as minority, financial independence, and parenthood, while baseline drinking in 2005 was negatively associated with race as minority, decision making, and financial independence.

**Multivariate analyses.** For the following tests of hierarchical multiple regression, the Holm-Bonferroni method was used to correct for multiple testing for each multiple regression equation (i.e., significance was set at  $p \leq .025$ ) (Holm, 1979). To control for individual differences between participants, Model One included only sociodemographic variables (age, gender, parental education, race, and baseline drinking in 2005). The first model significantly predicted drinking frequency in 2011;  $F(5, 514) = 32.10, p < .001, R^2 = .24$ . The next model included both sociodemographic predictors and external markers. External markers (parenthood, marriage, and employment) and sociodemographic variables approached statistical significance to predict drinking frequency in 2011, above that of sociodemographic markers;  $F(8, 514) = 2.60, p = .051, R^2 = .25$ . Parenthood was noted to be the only significant external marker in the equation. Results for this model are summarized in Table 4A in Appendix H. Tests of logistic regression were significant for binge drinking but did not include any external markers as

significant predictors (see Table 5A in Appendix I). Finally, the last model included sociodemographic predictors and internal markers. The inclusion of internal markers (responsibility, decision making, and financial independence) also approached significance to predict drinking frequency in 2011, above that of sociodemographic markers and baseline drinking;  $F(8, 514) = 2.41, p = .066, R^2 = .25$ . Financial independence was observed to be the only significant internal marker in this model (see Table 6A in Appendix J). Tests of logistic regression were significant for binge drinking but did not include any internal markers as significant predictors (see Table 7A in Appendix K).

**Mediation.** To test for mediation, the Baron and Kenny (1986) approach was used. For a summary of all statistics, see Table 8A in Appendix L. First, the predictor (parenthood), sociodemographic variables, and baseline measure of alcohol frequency significantly predicted drinking frequency in 2011, above that of sociodemographic markers and baseline drinking;  $F(6, 514) = 5.15, p = .024, R^2 = .25$ . Next, parenthood, sociodemographic variables, and baseline measure were significantly predictive of the mediator, financial independence;  $F(6, 514) = 6.53, p = .011, R^2 = .07$ . Financial independence significantly predicted frequency of drinking in 2011, when parenthood, sociodemographic variables, and baseline drinking were included in the model;  $F(7, 514) = 5.58, p = .019, R^2 = .26$ . Finally, the predictive effect of parenthood on drinking frequency in 2011 was slightly lessened from Model One ( $t = -2.27, p = .024$ ) to Model Two ( $t = -1.99, p = .046$ ) to suggest partial mediation.

**Sobel test.** To test the significance of this model of partial mediation (see Figure 2), a Sobel test was used to determine if the indirect effect of financial independence

varied significantly from zero (Preacher & Leonardelli, 2015; Sobel, 1982). The critical ratio for the Sobel test was -1.78 ( $SE = 0.03, p = .075$ ).

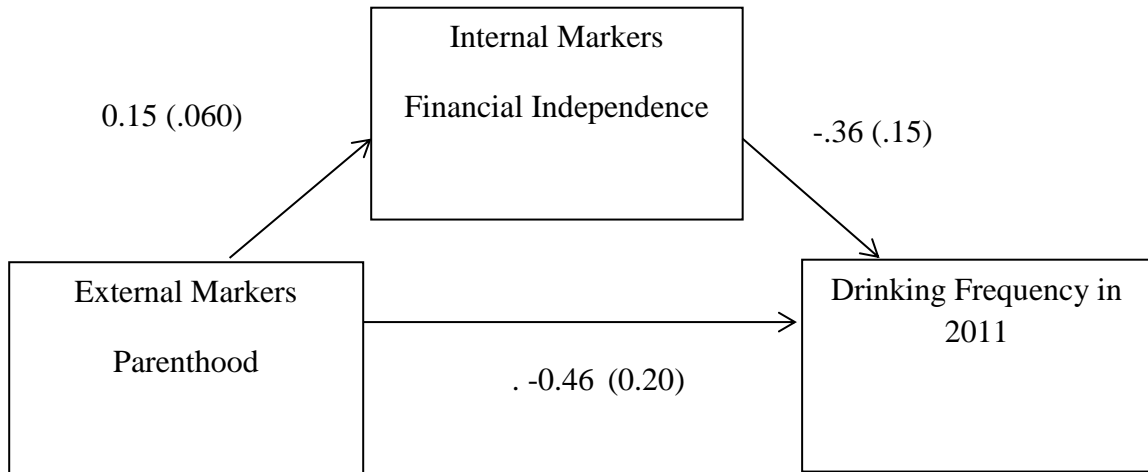


Figure 2: Financial Independence as a Mediator between Parenthood and Drinking Frequency in 2011

### Discussion

As inferred by Bachman et al. (2002) and Hypothesis One, self-reported days of binge drinking decreased from 2005 to 2011. However, there was conflicting evidence to support Hypothesis One which showed a decrease in all drinking behavior from 2005 to 2011. As binge drinking decreased, the frequency of drinking was reported to have marginally increased. This outcome opposes previous findings that associated substance use decline in all domains at the end of the transition as related to obligations restricting recreational activities (Bachman et al., 2002; Barnes et al., 1993; Kandel & Logan, 1984). This may have been a result of some respondents not being able to drink regularly because they were not of legal age to drink in 2005. However, these findings suggest that drinking frequency increased after individuals became of age to drink during a period of initiation, as described by Kandel and Logan (1984), while rates of binge drinking

decreased overall. These results are supportive of Schulenberg et al. (1997) models that associate risky behaviors, like drinking, as either coping mechanisms or experimentation characteristic of the adulthood transition.

In support of the previous literature, this study found positive correlations between internal markers to validate their use as a predictive set to characterize perception of adulthood status (Arnett, 2007; Arnett, 2001; Fadjukoff et al., 2007; Molgat, 2007; Nelson & Barry, 2005; Greene et al., 1992). All internal markers possessed intuitive relationships with external markers of adulthood. As anticipated, parents were more likely to be responsible, have better decision making skills, and were financially independent. Essentially, the current study associates parenthood with a higher attainment on internal markers that indicate successful identity navigation. This parallels the findings of Fadjukoff et al. (2007) that associated early parenthood with lower identity achievement statuses than their peers. However, the current study did not consider the effect of timing of external markers, only their presence or absence. Respondents who were employed were more likely to be responsible and financially independent, although not necessarily better at decision making. Being married, however, was associated only with higher financial independence. Interestingly, financial independence was the only internal marker to be related or predictive of alcohol use in 2011.

Hypothesis Two stated that the presence of external markers in emerging adulthood would predict a) lower drinking frequency in late emerging adulthood and b) the absence of binge drinking behavior. The sociodemographic predictors of age, gender, and parental education were predictive of the frequency of alcohol use in 2011. Baseline

drinking was also significantly predictive of alcohol frequency in 2011. To address Hypothesis Two, the model including all of the external markers was not a better predictor than sociodemographic variables. Contrary to Bachman et al. (2002) and Kandel and Logan (1984), the only external marker that was considered to be predictive within the model was parenthood. Marital status and employment were not considered significant predictors in the model. Obligations of parenthood might have been enough to alter recreational activities, while employment and marriage independently were not. There was no evidence that any external markers were predictive of eliminating binge drinking behavior. This made sense as one particular role was not characteristic of binge drinking. Sociodemographic variables (age, gender, parental education), however, were predictive of drinking frequency. In support of claims made by Patrick et al. (2012), both higher socioeconomic status and higher age were predictive of heavy drinking.

Hypothesis Three stated that higher scores for internal markers in emerging adulthood would predict a) lower levels of drinking frequency in late emerging adulthood and b) the absence of binge drinking behavior. To address Hypothesis Three, the model, including all internal markers, was not considered predictive above that of sociodemographic markers. Again, sociodemographic variables and baseline drinking were considered predictive of drinking frequency. In the model, the only internal marker that was considered to be predictive was financial independence. Financial independence seemed to be the most relevant internal marker to drinking behaviors, possibly as a result of its centrality to the adult role. Therefore, it may be the prominent internal marker of emerging adulthood. Interestingly, higher parental education was associated with heavier drinking and financial independence was predictive of lower

drinking frequency. This supports the claims of Molgat (2007) that financial matters are the primary focus of emerging adulthood, although other skills and identity markers remain relevant.

There was no evidence that any internal markers were predictive of binge drinking behavior. This means that high or low attainment on a particular marker was not directly predictive of the presence of maladaptive drinking patterns. This may have been a result of how binge drinking was dichotomized as present or absent. It is possible that differences would have been reflected in *levels* of binge drinking. As binge drinking was dichotomized, chronic binge drinking behavior was not differentiated from occasional binge drinking behavior. Either pattern may have been reduced but not eliminated. This would mesh with reports made by Schulenberg et al. (1996) that binge drinking patterns range widely.

Hypothesis Four expected that internal markers would mediate the relationship between external markers of adulthood and alcohol frequency. All external and internal markers were not significantly predictive in regression equations so all markers were not pursued for mediation. The results suggest the existence of an indirect effect of financial independence between parenthood and frequency of drinking. The nature of the relationship was that drinking frequency reduced when an individual established parenthood, partly as a result of also establishing financial independence from their own parents. However, the Sobel Test determined that this indirect effect did not reach significance. The current analyses did not provide full support for a mediating relationship. However, parenthood and financial independence were considered

prominent indicators of adulthood and were both predictive of alcohol frequency in young adulthood.

**Strengths.** The current study was internally valid. It accounted for potential confounds embedded within the sociodemographic differences of gender, age, race, and socioeconomic status, as well as baseline drinking differences. Data collection was consistent, structured, and free of bias due to the way PSID data collection was completed. All of the same participants were used for analyses both in 2005 and 2011 to control for individual differences. External validity of the current study was also good as participants reported their real behaviors and opinions. As the dataset was panel wave with a national sample, results may be generalized to emerging adults throughout the nation.

**Limitations.** Since the PSID questionnaires specifically focused on economic measures, the ability to create precise representations of responsibility and decision making measures was limited. While relevant, financial responsibility was measured as opposed to a more general sense of taking responsibility for one's actions as described by Arnett (2001). The decision making measure represented a sense of psychological competence as opposed to independent decision making. The current study was also unable to directly ask participants if they considered themselves to be adults or emerging adults, like Nelson and Barry (2005). This would have been helpful in efforts to review the relevance of external and internal markers as indicators of the adulthood transition. All data was self-reported which may limit its accuracy as participants may not have been truthful in their responses or subject to cognitive error and situational sensitivity (Brenner, Billy, & Grady, 2003; Schwarz, 1999). Participants' drinking patterns may have also

been affected by the economic hardships experienced throughout the nation between the years of 2005 and 2011.

Secondly, the analytic sample size was mildly underpowered for regression analyses, assuming the presence of a small effect size. This increases the likelihood of Type One or Two errors which may limit the ability of the current study to report valid real-world conclusions. In addition, the dependent measure for drinking frequency was comprised of only one question. However, this practice is not unusual in the frame of secondary data analysis and prospective developmental research; it was the only normally distributed measure of alcohol frequency available to the researcher. Other measures of alcohol use were extremely skewed and were unusable for regression analyses.

### **Conclusion**

The concept of becoming an adult is complicated. Identifying adulthood status is both subjective and multidimensional. It is clear that both external markers and internal markers are relevant criteria to adulthood. Each is positively related to the others and suggests that success in one domain leads to success in another. This study provides evidence that attainments in external and internal domains are normative; both naturally increase with age. Higher attainment of financial independence and becoming a parent predicted lower frequency of drinking behavior. Parenthood and financial independence are both predictors of alcohol use frequency in late emerging adulthood. Yet, drinking frequency did not significantly decline into late emerging adulthood. However, rates of binge drinking were observed to significantly decrease at the end of this transition.



Interestingly, fulfillment of these external and internal domains does not seem to be predictive of the presence of binge drinking behavior.

Internal markers of adulthood and their relationship with substance use should continue to be investigated. Research should focus on internal markers, specifically financial independence. Alternatively, the relationship between financial hardship and drinking frequency should be considered. Other foci should include refining measures of internal markers, relationships with illicit drugs, and relationships between external markers and internal markers. Future investigations should consider the potential of external markers and internal markers to be independent predictors in a moderating relationship. Understanding the process of the acceptance of the adult role will help emerging adults to better adapt to their new identities, effectively easing the stress of the transition and in turn reduce regular alcohol use.

Learning about the nature of acquisition of drinking behaviors will continue to provide insight into constructing preventative programs for drinking and interventions for alcohol abuse. Health communication messages that target emerging adults may focus on themes of financial independence, responsibility, and independent decision making. Preventative programs can focus on financial independence to foster development of responsibility and independent decision making skills, in an effort to reduce drinking behaviors. Interventions can target parents in emerging adulthood and focus on developing financial independence in order to lower drinking frequencies in this population. Effectively educating emerging adults will help to reduce poor behavioral outcomes associated with drinking. This effort will encourage the adoption of healthy lifestyles by emerging adults across the nation.

## References

- Arnett, J. J. (1994). Are college students adults? Their conceptions of the transition to adulthood. *Journal of Adult Development, 1*(4), 213-225.
- Arnett, J. J. (1998). Learning to stand alone: The contemporary American transition to adulthood in cultural and historical context. *Human Development, 41*(5-6), 295-315.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist 55*: 469-480.
- Arnett, J. J. (2001). Conceptions of the transition to adulthood: Perspectives from adolescence through midlife. *Journal of Adult Development, 8*(2), 133-143.
- Arnett, J. J. (2005). The developmental context of substance use in emerging adulthood. *The Journal of Drug Issues, 35*(2): 235-253.
- Arnett, J. J. (2007). Socialization in emerging adulthood: From the family to the wider world, from socialization to self-socialization. In J. Grusec & P. Hastings (Eds.), *Handbook of socialization: Theory and research*, 208-230. New York: The Guilford Press.
- 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 Inc.

- Barnes, G. M., Welte, J. W., & Dintcheff, B. A. (1993). Decline in alcohol use among 7-12th grade students in New York State, 1983-1990. *Alcoholism: Clinical and Experimental Research, 17*(4), 797-801.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Blomeyer, D., Buchmann, A. F., Schmid, B., Jennen-Steinmetz, C., Schmidt, M. H., Banaschewski, T., & Laucht, M. (2011). Age at first drink moderates the impact of current stressful life events on drinking behavior in young adults. *Alcoholism: Clinical and Experimental Research, 35*(6), 1142-1148.
- Bradley, G., & Wildman, K. (2002). Psychosocial predictors of emerging adults risk and reckless behaviors. *Journal of Youth and Adolescence, 31*(4), 253-265.
- Brener, N. D., Billy, J. O., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. *Journal of Adolescent Health, 33*(6), 436-457.
- Cohen, J. (1992). A power primer. *Psychological bulletin, 112*(1), 155-159.
- Cote, J.E., Levine, C. (1987). A formulation of Erikson's theory of ego identity formation. *Developmental Review, 7*, 273-325.
- Del Missier, F., Mäntylä, T., & Bruin, W. B. (2012). Decision-making competence, executive functioning, and general cognitive abilities. *Journal of Behavioral Decision Making, 25*(4), 331-351.

- Facio, A., & Micocci, F. (2003). Emerging adulthood in Argentina. *New Directions for Child and Adolescent Development, 100*, 21-32.
- Fadjukoff, P., Kokko, K., & Pulkkinen, L. (2007). Implications of timing of entering adulthood for identity achievement. *Journal of Adolescent Research, 22*(5), 504-530.
- Faul, F. (2014). G\*Power (Version 3.1.9.2) [computer software]. Available from <http://www.gpower.hhu.de/en.html>
- Fillmore, M. T., & Jude, R. (2011). Defining “binge” drinking as five drinks per occasion or drinking to a .08% BAC: which is more sensitive to risk?. *The American Journal on Addictions, 20*(5), 468-475.
- Galambos, N. L., Turner, P. K., & Tilton-Weaver, L. C. (2005). Chronological and subjective age in emerging adulthood the crossover effect. *Journal of Adolescent Research, 20*(5), 538-556.
- Goudriaan, A. E., Grekin, E. R., & Sher, K. J. (2007). Decision making and binge drinking: A longitudinal study. *Alcoholism: Clinical and Experimental Research, 31*(6), 928-938.
- Gouskova, E., & Heeringa, S. Survey Research Center. (2008). *PSID technical report: The 2005 PSID transition to adulthood supplement (ta) weights*. Retrieved from <http://psidonline.isr.umich.edu/CDS/TA05WeightsDoc.pdf>.
- Greene, A. L., Wheatley, S. M., & Aldava IV, J. F. (1992). Stages on life's way: Adolescents' implicit theories of the life course. *Journal of Adolescent Research, 7*(3), 364-381.

- Grotevant, H. D., & Adams, G. R. (1984). Development of an objective measure to assess ego identity in adolescence: Validation and replication. *Journal of Youth and Adolescence, 13*(5), 419-438.
- Halpern-Felsher, B. L., & Cauffman, E. (2001). Costs and benefits of a decision: Decision-making competence in adolescents and adults. *Journal of Applied Developmental Psychology, 22*(3), 257-273.
- Hartman, D., & Swartz, T. (2007). Constructing adulthood: Agency and subjectivity in adolescence and adulthood. *Advances in Life Course Research, 11*, 253-286.
- Hingson, R. W., Heeren, T., Edwards, E. M., & Saitz, R. (2012). Young adults at risk for excess alcohol consumption are often not asked or counseled about drinking alcohol. *Journal of General Internal Medicine, 27*(2), 179-184.
- Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics, 65-70*.
- Institute for Social Research (2008). The panel study of income dynamics' child development supplement transition into adulthood 2005: User guide. Retrieved from <http://www.psidonline.org>
- Institute for Social Research (2013). PSID transition to adulthood study 2001: User guide. Retrieved from <http://www.psidonline.org>
- Jablonski, J. F., & Martino, S. D. (2013). A qualitative exploration of emerging adults' and parents' perspectives on communicating adulthood status. *The Qualitative Report, 18*(37), 1-12.

- Kandel, D. B., & Logan, J. A. (1984). Patterns of drug use from adolescence to young adulthood: I. periods of risk for initiation, continued use, and discontinuation. *American Journal of Public Health* 74(7): 660-666.
- 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(1), 87-103.
- Kuntsche, E., & Gmel, G. (2013). Alcohol consumption in late adolescence and early adulthood—where is the problem. *Swiss Med Weekly*, 143, w13826.
- Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology*, 3, 551-558.
- Marcia, J. E. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 159-187). New York: John Wiley
- Mental Health Services Administration (2012). Results from the 2011 national survey on drug use and health: Summary of national findings. *NSDUH Series H-44, HHS Publication NO (SMA)*, 12-4713.
- Molgat, M. (2007). Do transitions and social structures matter? How ‘emerging adults’ define themselves as adults. *Journal of Youth Studies*, 10(5), 495-516.
- Montgomery, M. J. (2005). Psychosocial intimacy and identity: From early adolescence to emerging adulthood. *Journal of Adolescent Research*, 20, 346-376.
- Nelson, L. J., & Barry, C. M. (2005). Distinguishing features of emerging adulthood: The role of self-classification as an adult. *Journal of Adolescent Research*, 20(2), 242-262. doi: 10.1177/0743558404273074

- Nurmi, J. (1997). Self-definition and mental health during adolescence and young adulthood. *Health Risks and Developmental Transitions during Adolescence*, 5-13.
- Parker, A. M., & Fischhoff, B. (2005). Decision-making competence: External validation through an individual-differences approach. *Journal of Behavioral Decision Making*, 18(1), 1-27.
- Patrick, M. E., Wightman, P., Schoeni, R. F., & Schulenberg, J. E. (2012). Socioeconomic status and substance use among young adults: A comparison across constructs and drugs. *Journal of Studies on Alcohol and Drugs*, 73(5), 772.
- Pedersen, W., & von Soest, T. (2013). Socialization to binge drinking: A population-based, longitudinal study with emphasis on parental influences. *Drug and Alcohol Dependence*, 133(2), 587-592.
- Podsakoff, N. P., Podsakoff, P. M., MacKenzie, S. B., & Klinger, R. L. (2013). Are we really measuring what we think we're measuring? Using video techniques to supplement traditional construct validation procedures. *Journal of Applied Psychology*, 98, 99-113.
- Preacher, K. J., & Leonardelli, G. J. (2015). Calculation for the Sobel test: An interactive calculation tool for mediation tests. Retrieved from <http://quantpsy.org/sobel/sobel.htm>
- PSID. (2013). *A national study of socioeconomics of and health over lifetimes and across generations*. Retrieved from <http://psidonline.isr.umich.edu/default.aspx>

- Roisman, G., Masten, A., Coatsworth, J. D., & Tellegen, A. (2004). Salient and emerging developmental tasks in the transition to adulthood. *Child Development, 75*, 123-133.
- Schulenberg, J., Maggs, J., & Hurrelmann, K. (1997). *Health risks and developmental transitions during adolescence*, 5-13. Cambridge: Cambridge University Press.
- Schulenberg, J., & Maggs, J. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol, 14*, 54-70.
- Schulenberg, J., O'Malley, P., Bachman, J., Wadsworth, K., & Johnston, L. (1996). Getting and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *Journal of Studies on Alcohol, 57*(3), 289-304.
- Schwarz, N. (1999). Self-reports: How the questions shape answers. *American Psychologist, 54*(2), 93-105.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp.290-312). San Francisco: Jossey-Bass.
- Tucker, J., Ellickson, P., Orlando, M., Martino, S., & Klein, D. (2005). Substance use trajectories from early adolescence to emerging adulthood: A comparison of smoking, binge drinking, and marijuana use. *Journal of Drug Issues, 35*, 307-331. doi: 10.1177/002204260503500205.



Waterman, A. S. (1982). Identity development from adolescence to adulthood: An extension of theory and a review of research. *Developmental Psychology, 18*(3), 341-358.

White, H. R., Labouvie, E. W., & Papadaratsakis, V. R. (2005) Changes in substance use during the transition to adulthood: A comparison of college students and their noncollege age peers. *Journal of Drug Issues, 35*, 281-306. doi: 10.1177/002204260503500204

## **Appendix A: External Markers of Adulthood**

### **Marital Status**

TA050069 "D1 CURRENT MARITAL STATUS"

D1. Are you married, have you never been married, or are you widowed, divorced, or separated?

Codes

1 Married

2 Never married

Page 40 of 147

Job ID 185882

3 Widowed

4 Divorced

5 Separated

8 DK

9 NA; refused

### **Parenthood**

TA050091 "D28A NUMBER OF CHILDREN"

D28a. How many (biological,) adopted, or step- children do you have?

Codes

0 - 20 Actual number

98 DK

99 NA; refused

### **Employment**

TA050127 "E1 EMPLOYMENT STATUS 1ST MENTION"

E1. We would like to know about what you do -- are you working now, looking for work, keeping house, a student, or what?--1ST MENTION

If R was Head or Wife/"Wife" in the 2005 PSID interview (TA050011=1 or 2), values for this variable were taken from that interview.

Codes

- 1 Working now, including military
- 2 Only temporarily laid off; sick or maternity leave
- 3 Looking for work, unemployed
- 4 Retired
- 5 Disabled, permanently or temporarily
- 6 Keeping house
- 7 Student
- 8 Other
- 98 DK
- 99 NA; refused

TA050128 "E1 EMPLOYMENT STATUS 2ND MENTION"

E1. We would like to know about what you do -- are you working now, looking for work, keeping house, a student, or what?--2ND MENTION

If R was Head or Wife/"Wife" in the 2005 PSID interview (TA050011=1 or 2), values for this variable were taken from that interview.

Codes

- 1 Working now, including military
- Page 42 of 147
- Job ID 185882
- 2 Only temporarily laid off; sick or maternity leave
- 3 Looking for work, unemployed
- 4 Retired
- 5 Disabled, permanently or temporarily
- 6 Keeping house
- 7 Student
- 8 Other
- 98 DK
- 99 NA; refused
- 0 Inap.: no second mention

TA050129 "E1 EMPLOYMENT STATUS 3RD MENTION"

E1. We would like to know about what you do -- are you working now, looking for work, keeping house, a student, or what?--3RD MENTION

If R was Head or Wife/"Wife" in the 2005 PSID interview (TA050011=1 or 2), values for this variable were taken from that interview.

Codes

- 1 Working now, including military

- 2 Only temporarily laid off; sick or maternity leave
- 3 Looking for work, unemployed
- 4 Retired
- 5 Disabled, permanently or temporarily
- 6 Keeping house
- 7 Student
- 8 Other
- 98 DK
- 99 NA; refused
- 0 Inap.: less than three mentions

## **Appendix B: Internal Markers of Adulthood**

### **Financial Responsibility**

TA050044 "B5A HOW MUCH RESONSIBLTY EARNNG OWN LIVNG"

B5a. As people get older they begin to take more responsibility for themselves. How much responsibility do you currently take for earning your own living?

(Would you say: somebody else does this for me all of the time, somebody else does this for me most of the time, I do this half of the time, I do this most of the time, or I am completely responsible for this all of the time?)

Codes

- 1 Somebody else does this for me all of the time
- 2 Somebody else does this most of the time
- 3 I do this half of the time
- 4 I do this most of the time
- 5 I am completely responsible for this all the time
- 8 DK
- 9 NA; refused

TA050045 "B5B HOW MUCH RESPONSIBLTY PAYNG OWN RENT"

B5b. How much responsibility do you currently take for paying your rent or mortgage?

(Would you say: somebody else does this for me all of the time, somebody else does this for me most of the time, I do this half of the time, I do this most of the time, or I am completely responsible for this all of the time?)

Codes

- 1 Somebody else does this for me all of the time
- 2 Somebody else does this most of the time
- 3 I do this half of the time
- 4 I do this most of the time
- 5 I am completely responsible for this all the time
- 6 No rent or mortgage to pay
- 8 DK
- 9 NA; refused

TA050046 "B5C HOW MUCH RESPONSBLTY FOR OWN BILLS "

B5c. How much responsibility do you currently take for paying your bills?

(Would you say: somebody else does this for me all of the time, somebody else does this for me most of the time, I do this half of the time, I do this most of the time, or I am completely responsible for this all of the time?)

Codes

- 1 Somebody else does this for me all of the time
- 2 Somebody else does this most of the time
- 3 I do this half of the time
- 4 I do this most of the time
- 5 I am completely responsible for this all the time
- 6 No bills
- 8 DK
- 9 NA; refused

TA050047 "B5D HOW MUCH RESPONSIBLTY MANAGING MONEY"

B5d. How much responsibility do you currently take for managing your money?

(Would you say: somebody else does this for me all of the time, somebody else does this for me most of the time, I do this half of the time, I do this most of the time, or I am completely responsible for this all of the time?)

Codes

- 1 Somebody else does this for me all of the time
- 2 Somebody else does this most of the time
- 3 I do this half of the time
- 4 I do this most of the time
- 5 I am completely responsible for this all the time
- 8 DK
- 9 NA; refused

### **Decision Making**

TA050048 "B6A HOW GOOD AT RESPONSIBILITY"

B6a. On a scale of 1 to 7, where 1 means "Not At All Well" and 7 means "Extremely Well", how good are you at taking responsibility for your actions?

Codes

- 1 - 7 Values range from 1 to 7; 1 represents "not at all well" and 7 represents "extremely well"
- 8 DK
- 9 NA; refused

TA050049 "B6B HOW GOOD AT PROBLEM SOLVING"

B6b. (On a scale of 1 to 7, where 1 means "Not At All Well" and 7 means "Extremely Well",) how good are you at solving problems you encounter?

Codes

1 - 7 Values range from 1 to 7; 1 represents "not at all well" and 7 represents "extremely well"

8 DK

9 NA; refused

TA050054 "C1C HOW GOOD AT LOGIC COMP W/OTRS"

C1c. Compared to other people, how good are you at logical, analytic thinking?

(On a scale of 1 to 7, where 1 means "A lot worse than other people" and 7 means "A lot better than other people").

Codes

1 - 7 Values range from 1 to 7; 1 represents "a lot worse than others" and 7 represents "a lot better than others"

8 DK

9 NA; refused

TA050057 "C1F HOW INDEPENDENT COMPARED W/OTRS"

C1f. Compared to other people, how would you rate your independence? (On a scale of 1 to 7, where 1 means "A lot worse than other people" and 7 means "A lot better than other people")

Codes

1 - 7 Values range from 1 to 7; 1 represents "a lot worse than others" and 7 represents "a lot better than others"

8 DK

9 NA; refused

TA050059 "C1H HOW DECISIVE COMPARED W/OTHERS"

C1h. Compared to other people, how would you rate your decisiveness?

(On a scale of 1 to 7, where 1 means "A lot worse than other people" and 7 means "A lot better than other people")

Codes

1 - 7 Values range from 1 to 7; 1 represents "a lot worse than others" and 7 represents "a lot better than others"

8 DK

9 NA; refused

## **Financial Independence**

TA050559 "F56A WTR GIVEN HOUSE/CONDO"

F56a. The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives purchase a house or condominium for you?

Codes

1 Yes

5 No

8 DK

9 NA; refused

TA050561 "F56B WTR RENT OR MORTGAGE COVERED"

F56b. (The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives pay rent or a mortgage on your behalf?)

Codes

1 Yes

5 No

8 DK

9 NA; refused

TA050563 "F56C WTR GIVEN PERSONAL VEHICLE"

F56c. (The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives) give you a personal vehicle?)

Codes

1 Yes

5 No

8 DK

9 NA; refused

TA050565 "F56D WTR TUITION COVERED"

F56d. (The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives) pay for tuition?)



Codes

1 Yes

5 No

8 DK

9 NA; refused

TA050567 "F56E WTR EXPENSES/BILLS COVERED"

F56e. (The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives) cover expenses or bills?

Codes

1 Yes

5 No

8 DK

9 NA; refused

TA050569 "F56F WTR GOT PERSONAL LOAN"

F56f. (The next questions are about financial help that you might have received in the last 12 months. This could be in the form of money given to you or money paid on your behalf for goods or schooling. Did your parents or other relatives) give you a personal loan?

Codes

1 Yes

5 No

8 DK

9 NA; refused

## **Appendix C: Alcohol Use**

### **Dependent Measure in 2011**

TA110913 "H37 HOW OFTEN HAVE DRINKS-HD"

H37. In the last year, on average, how often did you have any alcohol to drink?

Would you say: less than once a month, about once a month, several times a month, about once a week, several times a week, or every day? If R was head or wife/"wife" in the 2011 PSID interview (TA110011=1 or 2), values for this variable were taken from that interview.

Codes

- 1 Less than once a month
- 2 About once a month
- 3 Several times a month
- 4 About once a week
- 5 Several times a week
- 6 Every day
- 8 DK

### **Other Measures of Alcohol Use**

TA110832 "H12B WTR ALCOHOL PROBLEMS"

H12B. What was the diagnosis? What is the emotional or psychiatric disorder?--  
ALCOHOL  
ABUSE/DEPENDENCE/ALCOHOLISM

If R was head or wife/"wife" in the 2011 PSID interview (TA110011=1 or 2), values for this variable were taken from that interview.

Codes

- 1 Diagnosed with alcohol abuse/dependence/alcoholism
- 8 DK
- 9 NA; refused
- 0 Inap.: never diagnosed with alcohol abuse/dependence/alcoholism; has never been diagnosed with emotional, nervous, or psychiatric problems (TA110825=5); NA, DK, RF whether ever been diagnosed

TA110914 "H38 # ALCOHOLIC DRINKS PER DAY-HD"

H38. In the last year, on the days you drank, about how many drinks did you have?

(By "one drink" I mean one 12 ounce beer, one 4 ounce glass of wine, or one 1 ounce shot of liquor.) If R was head or wife/"wife" in the 2011 PSID interview (TA110011=1 or 2), values for this variable were taken from that interview.

Codes

1 One drink or fewer

2 - 50 Actual number of drinks

98 DK

99 NA; refused

0 Inap.: did not drink in the last year; never drank any alcoholic beverages

(TA110912=5); NA, DK, RF whether ever drank any alcoholic beverages (TA110912=8

9 or 9); NA, DK, RF how often R drank alcohol in the last year (TA110913=8 or 9)

10

TA110915 "H39 # DAYS HAD 4-5 DRINKS-HEAD "

H39. In the last year, on how many days have you had (IF MALE THEN 'five' / IF FEMALE THEN 'four') or more drinks on one occasion?

(By "one drink" I mean one 12 ounce beer, one 4 ounce glass of wine, one 1 ounce shot of liquor.) If R was head or wife/"wife" in the 2011 PSID interview (TA110011=1 or 2), values for this variable were taken from that interview.

Codes

1 - 365 Actual number

998 DK

999 NA; refused

0 Inap.: zero days; never drank any alcoholic beverages (TA110912=5); NA, DK, RF

whether ever drank any alcoholic beverages (TA110912=8 or 9); NA, DK, RF how

often R drank alcohol in the last year (TA110913=8 or 9)

or 9); NA, DK, RF how often R drank alcohol in the last year (TA110913=8 or 9)

## **Appendix D: Sociodemographic Information**

### **Gender**

ER32000 "SEX OF INDIVIDUAL"

Sex of Individual

Codes

1 Male

2 Female

9 NA

### **Age**

ER33804 "AGE OF INDIVIDUAL 05"

Age at the Time of the 2005 Interview

The values for this variable represent the actual age of the individual reported in years on his or her most recent birthday. Consistency of ER33804 with ER33805-ER33806 was not forced unless it was clear that the interviewer made an error in recording the individual's age or birth date.

Codes

1 Newborn up to second birthday

2 - 125 Actual age

Page 28 of 147

Job ID 185882

999 NA; DK

0 Inap.: from Latino sample (ER30001=7001-9308)

### **Race/Ethnicity**

TA050883 "L6 HISPANICITY "

L6. In order to get an idea of the different races and ethnic groups that participate in the study, I would like to ask you about your background. Are you Spanish, Hispanic, or Latino? That is, Mexican, Mexican American, Chicano, Puerto Rican, Cuban, or other Spanish?

Codes

0 Not Spanish, Hispanic or Latino

- 1 Mexican
- 2 Mexican-American
- 3 Chicano
- 4 Puerto Rican
- 5 Cuban
- 7 Other Spanish
- 8 DK
- 9 NA; refused

TA050884 "L7 RACE MENTION #1"

L7. What is your race? Are you white, black, American Indian, Alaska Native, Asian, Native Hawaiian or Other Pacific Islander?--1ST MENTION

Codes

- 1 White
- 2 Black, African-American, or Negro
- 3 American Indian or Alaska Native
- 4 Asian
- 5 Native Hawaiian or Pacific Islander
- 7 Some other race
- 8 DK
- 9 NA; refused

TA050885 "L7 RACE MENTION #2"

L7. What is your race? Are you white, black, American Indian, Alaska Native, Asian, Native Hawaiian or Other Pacific Islander?--2ND MENTION

Codes

- 1 White
- 2 Black, African-American, or Negro
- 3 American Indian or Alaska Native
- 4 Asian
- 5 Native Hawaiian or Pacific Islander
- 7 Some other race
- 8 DK
- 9 NA; refused
- 0 Inap.: no second mention; NA, DK to first mention (TA050884=8 or 9)

TA050886 "L7 RACE MENTION #3"

L7. What is your race? Are you white, black, American Indian, Alaska Native, Asian, Native Hawaiian or Other Pacific Islander?--3RD MENTION

Codes

- 1 White
- 2 Black, African-American, or Negro

- 3 American Indian or Alaska Native
- 4 Asian
- 5 Native Hawaiian or Pacific Islander
- 7 Some other race
- 8 DK
- 9 NA; refused
- 0 Inap.: fewer than three mentions; NA, DK to first mention (TA050884=8 or 9)

### **Parental Education**

#### TA050947 "COMPLETED EDUCATION OF MOTHER"

##### Completed Education of Mother

The value for this variable was derived by identifying the parents using the Parent Identification file and then using the completed education variable from the 2005 individual file (ER33817).

##### Codes

- 0 - 16 Actual years of education
- 17 At least some post-graduate work
- 96 Mother is unknown; mother is known but she was never in the study and no education information available
- 98 DK
- 99 NA; refused

#### TA050949 "COMPLETED EDUCATION OF FATHER"

##### Completed Education of Father

The value for this variable was derived by identifying the parents using the Parent Identification file and then using the completed education variable from the 2005 individual file (ER33817).

##### Codes

- 0 - 16 Actual years of education
- 17 At least some post-graduate work
- 96 Father is unknown; father is known but he was never in the study and no education information available
- 98 DK
- 99 NA; refused

**Appendix E: Table 1A**

Descriptive Statistics for Alcohol Consumption in 2005 and 2011 (N=515)

<u>Drinking Variable in 2005</u>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Min</i>	<i>Max</i>	<i>n</i>	<i>%</i>
Drinking Frequency	1.77	1.78	0.54	0.00	6.00		
Drinks per Day	2.44	3.10	2.04	0.00	20.00	512*	
Average Days of Binge Drinking	13.00	41.08	5.80	0.00	365.00		
Number of Alcohol Drinkers						319	61.94
Diagnosed with Alcohol Dependency						1	0.32
<u>Number of Binge Drinkers</u>						224	43.50
<u>Drinking Variable in 2011</u>	<i>M</i>	<i>SD</i>	<i>Skew</i>	<i>Min</i>	<i>Max</i>	<i>n</i>	<i>%</i>
Drinking Frequency	2.37	1.79	0.07	0.00	6.00		
Drinkers per Day	2.28	2.40	3.00	0.00	25.00		
Average Days of Binge Drinking	10.28	38.65	6.94	0.00	365.00		
Number of Alcohol Drinkers						392	76.12
Diagnosed with Alcohol Dependency						0	0
<u>Number of Binge Drinkers</u>						274	53.20

\*Indicates the number of participants with complete data for this descriptive report.

**Appendix F: Table 2A**

Results of Repeated Measures ANOVA for Time with Drinking Behavior 2005 and 2011

<i>Measure</i>	<i>Drinking Frequency</i>			<i>Drinks per Day</i>			<i>Number of Binge Drinkers</i>			<i>Days of Binge Drinking</i>		
	<i>MS</i>	<i>df</i>	<i>F</i>	<i>MS</i>	<i>df</i>	<i>F</i>	<i>MS</i>	<i>df</i>	<i>F</i>	<i>MS</i>	<i>df</i>	<i>F</i>
Time	46.42	1	26.68***	13.28	1	2.83	1.98	1	13.61***	7572.93	1	5.37*
Time*Age	40.34	1	23.19***	14.23	1	3.04	1.78	1	12.21**	7965.46	1	5.65*
Error	1.74	513		4.69	510		0.15	513		1410.82	513	

Note: \*\*\* $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ .



**Appendix G: Table 3A**

Intercorrelations among Key Study Variables ( $N=515$ )

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Male	--											
2. Age in 2005	-.04	--										
3. Parental Education	.06	.02	--									
4. Race as Minority	-.02	-.02	-.45***	--								
5. Married	-.04	.04	.04	-.11*	--							
6. Parent	-.16***	.11*	-.14**	.13**	.21***	--						
7. Employed	.03	.04	-.04	-.07	-.01	-.04	--					
8. Responsibility	.11**	.23***	-.06	.06	.02	.12**	.32***	--				
9. Decision Making	.02	.09*	-.14**	.25***	.07	.15**	.01	.26***	--			
10. Financial Independence	-.00	.11*	-.18***	.16***	.10*	.15**	.15**	.27***	.13**	--		
11. Drinking Frequency 2005	.18***	.16***	.25***	-.29***	-.07	-.07	.00	.07	-.10*	-.11*	--	
12. Drinking Frequency 2011	.18***	-.07	.28***	-.20***	-.03	-.17***	-.06	-.02	-.06	-.19***	.43***	--

Note: \*\*\* $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

**Appendix H: Table 4A**

Results of Hierarchical Regression: Sociodemographic and External Markers Predicting Drinking Frequency in 2011(N=515)

Dependent Variable	Frequency of Drinking in 2011							
	Model 1				Model 2			
Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>
Age in 2005	-0.24	0.08	-.13	-3.21**	-0.22	0.08	-.11	-2.89**
Male	0.32	0.14	.09	2.29*	0.29	0.14	.08	2.00*
Parental Education	0.08	0.02	.17	3.92***	0.07	0.02	.16	3.60***
Race as Minority	-0.04	0.16	-.01	-0.24	-0.02	0.16	-.01	-0.12
Baseline Drinking	0.39	0.04	.39	9.21***	0.39	0.04	.39	9.19***
Married					0.22	0.40	.02	0.55
Parent					-0.50	0.21	-.10	-2.39*
Employed					-0.21	0.14	-.06	-1.53
$R^2$		.24				.25		
$R^2$ Change		.24				.01		
<i>F</i> for Change in $R^2$		32.10**				2.60		

Note: \*\*\* $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ .

**Appendix I: Table 5A**

Results of Logistic Regression: Sociodemographic and External Markers Predicting Binge Drinking in 2011 ( $N=515$ )

Dependent Variable	Binge Drinking in 2011					
	Model 1			Model 2		
Predictor	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>
Age in 2005	-0.33	0.11	0.72**	-0.32	0.11	0.73**
Male	-0.47	0.20	0.63*	-0.42	0.20	0.66*
Parental Education	0.06	0.03	1.06*	0.05	0.03	1.05
Race as Minority	0.24	0.23	1.27	0.21	0.23	1.24
Baseline Drinking	1.64	0.21	5.17***	1.64	0.21	5.13***
Married				-0.01	0.56	0.99
Parent				0.45	0.30	1.57
Employed				-0.03	0.20	0.97
Model $X^2 =$			109.42***			111.83***

Note: \*\*\* $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

**Appendix J: Table 6A**

Results of Hierarchical Regression: Sociodemographic and Internal Markers Predicting Drinking Frequency in 2011 (N=515)

Dependent Variable	Frequency of Drinking in 2011							
	Model 1				Model 2			
Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>
Age in 2005	-0.24	0.08	-.13	-3.21**	-0.22	0.08	-.12	-2.88**
Male	0.32	0.14	.09	2.29*	0.33	0.14	.09	2.31*
Parental Education	0.08	0.02	.17	3.92***	0.07	0.02	.16	3.63***
Race as Minority	-0.04	0.16	-.01	-0.24	-0.03	0.16	-.01	-0.18
Baseline Drinking	0.39	0.04	.39	9.21***	0.38	0.04	.38	9.04***
Responsibility					0.01	0.07	.00	0.10
Decision Making					0.07	0.10	.03	0.68
Financial Independence					-0.40	0.16	-.11	-2.59**
$R^2$		.24				.25		
$R^2$ Change		.24				.01		
<i>F</i> for Change in $R^2$		32.10**				2.41		

Note: \*\*\* $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

**Appendix K: Table 7A**

Results of Logistic Regression: Sociodemographic and Internal Markers Predicting Binge Drinking in 2011 (N=515)

Dependent Variable	Binge Drinking in 2011					
	Model 1			Model 2		
Predictor	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>	<i>B</i>	<i>SE B</i>	<i>Odds Ratio</i>
Age in 2005	-0.33	0.11	0.72**	-0.33	0.11	0.72**
Male	-0.47	0.20	0.63*	-0.47	0.20	0.63*
Parental Education	0.06	0.03	1.06*	0.05	0.03	1.06
Race as Minority	0.24	0.23	1.27	0.24	0.23	1.27
Baseline Drinking	1.64	0.21	5.17***	1.64	0.21	5.13***
Responsibility				0.00	0.11	1.00
Decision Making				0.02	0.14	1.02
Financial Independence				0.12	0.22	1.12
Model $X^2 =$			109.42***			109.72***

Note: \*\*\* $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ .

**Appendix L: Table 8A**

Results of Regression for Mediation: Parenthood Predicting Drinking Frequency Mediated by Financial Independence

Dependent Variable	Frequency of Drinking in 2011				Financial Independence				Frequency of Drinking in 2011			
	Model 1 (X to Y)				Model 2 (X to M)				Model 3 (X to M to Y)			
Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>
Age in 2005	-0.22	0.08	-.12	-2.94* *	0.06	0.02	.12	2.63**	-0.20	0.08	-.11	-2.66**
Male	0.28	0.14	.08	1.96*	0.04	0.04	.04	0.93	0.29	0.14	.08	2.07*
Parental Education	0.07	0.02	.16	3.75***	-0.01	0.01	-.12	-2.36*	0.07	0.02	.15	3.50**
Race as Minority	-0.01	0.16	-.00	-0.06	0.07	0.05	.08	1.58	0.02	0.16	.01	0.10
Baseline Drinking	0.39	0.04	.36	9.21***	-0.02	0.01	-.07	-1.58	0.38	0.04	.38	9.06***
Parent (X)	-0.46	0.20	-.09	-2.27*	0.15	0.06	.11	2.56*	-0.41	0.20	-.08	-2.00*
Financial Independence (Y)									-0.36	0.15	-.09	-2.36*
$R^2$			.25				.07				.26	
$R^2$ Change			.01				.01				.01	
<i>F</i> for Change in $R^2$			5.15*				6.53*				5.58*	

Note: \*\*\* $p \leq .001$ , \*\*  $p \leq .01$ , \*  $p \leq .05$ . ( $N=515$ )