

# Familial Predictors of Alcohol and Drug Use-Related Problems Among Middle-Aged and Older Adults

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Sara E. Miller, MPH<sup>1,2</sup> , Jennifer L. Maggs, PhD<sup>1</sup>,  
Rina D. Eiden, PhD<sup>3</sup>, and David M. Almeida, PhD<sup>1,2</sup>

## Abstract

This study evaluated whether recent family member alcohol and substance use problems (ASP) and density of family ASP (i.e., number of members with ASP) predict alcohol-related problems and drug use-related problems among middle-aged and older adults. Data were drawn from participants (age 42–93 years,  $n = 2168$ ) in the longitudinal *Midlife in the United States Study* (MIDUS). Poisson regression models revealed that adults' alcohol- and drug use-related problems were predicted by similar problems among family members. In particular, parent and partner ASP, but not child ASP, predicted alcohol-related problems in the middle-aged and combined samples, while only partner ASP predicted participants' drug use-related problems. In addition, density of family ASP predicted alcohol-related problems, but not drug use-related problems. There were no gender interactions. Study findings highlight that understanding how adult children, spouses, and aging parents

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<sup>1</sup>Department of Human Development and Family Studies, The Pennsylvania State University, University Park, PA, USA

<sup>2</sup>Center for Healthy Aging, The Pennsylvania State University, University Park, PA, USA

<sup>3</sup>Department of Psychology, The Pennsylvania State University, University Park, PA, USA

## Corresponding Author:

Sara E. Miller, College of Health and Human Development, The Pennsylvania State University, 325HHD Building University Park, PA 16802, USA.

Email: [sem588@psu.edu](mailto:sem588@psu.edu)

impact each other's substance use should be a priority of future aging and family research.

### **Keywords**

alcohol, drug use, problem drinking, family

## **Introduction**

Psychoactive drug use (i.e., alcohol and illicit drug use; prescription drug misuse) among older adults is a growing public health concern (Arndt, Clayton, & Schultz, 2011; Breslow, Castle, Chen, & Graubard, 2017; Wu & Blazer, 2011). Although alcohol and other substance use rates decrease with age, greater substance use among baby boomers (i.e., persons born between 1946 and 1964), combined with the aging of the population, will likely contribute to more older adults with substance use problems (Han, Gfroerer, Colliver, & Penne, 2009). In fact, an increasing percentage of substance use treatment admissions are for adults aged 55 years or older (Chhatre, Cook, Mallik, & Jayadevappa, 2017). Older adults are especially sensitive to the effects of substance use due to age-related physiological changes, the presence of comorbid conditions, and drug-medication interactions (Kuerbis, Sacco, Blazer, & Moore, 2014). Indeed, older adults can experience adverse consequences (e.g., risk of cognitive impairment, falls, and mortality) with relatively small amounts of use (Heuberger, 2009). Moreover, because these individuals do not meet the diagnostic criteria for dependence or abuse, and are less likely to view their drug use as problematic (Nemes et al., 2004), they frequently do not receive needed diagnosis or treatment (Barry & Blow, 2016; Khan, Davis, Wilkinson, Sellman, & Graham, 2002).

### *Theoretical Background*

Considering that substance use often affects the entire family system, one strategy for identifying older adults for early substance use treatment may be through the identification of substance use problems within their family context. Family systems theory asserts that family members are interdependent such that each family member influences other family members through direct and indirect pathways (Cowan & Cowan, 2006). Consequently, family processes (e.g., marital interactions, parenting, and child behaviors) both affect and are affected by the alcohol use of family members (Leonard & Eiden, 2007). For example, when an individual has a substance use problem, affected family members may respond with feelings of anxiety, criticism, and emotional distancing from that individual, which may reflexively lead to the

cyclical return to the substance (Bowen, 1974). Moreover, there is a range of other environmental, biological, and genetic factors within the family context that contribute to the transmission of substance use disorders (SUDs) within families (Parolin, Simonelli, Mapelli, Sacco, & Cristofalo, 2016). Accordingly, processes within the family system are important contributors to the initiation, maintenance, and treatment of problematic alcohol and substance use (Lander, Howsare, & Byrne, 2013).

Importantly, family system composition changes across the lifespan (Antonucci, Akiyama, & Takahashi, 2004). Older adults often have less social network diversity than younger adults, with a greater proportion of their relationships being comprised of close family members (Ajrouch, Antonucci, & Janevic, 2001). While this may reflect age-related selective narrowing of social networks to focus on more supportive relationships (English & Carstensen, 2014), it also reflects the involuntary nature and persistence of family relationships (Krause & Rook, 2003). It is more challenging to terminate a relationship with a family member than with a friend or coworker. As a result, negative qualities of family relationships tend to endure over time (Birditt, Jackey, & Antonucci, 2009).

A family member's SUD or substance misuse may be one such process within the family system influencing substance use behaviors during midlife and older adulthood. A person's SUD generally affects at least two family members (Copello, Orford, Velleman, Templeton, & Krishnan, 2000). The affected family members are more likely to experience psychiatric conditions, including their own SUDs, and they exhibit greater health care utilization than others without family members who have SUDs (Ray, Mertens, & Weisner, 2007; Weisner, Parthasarathy, Moore, & Mertens, 2010). There is both substance-specific risk that family members will have the same type of SUD as the individual with the SUD and non-specific risk of them having any form of SUD (Farmer, Kosty, Seeley, Gau, & Klein, 2019). Accordingly, relatives of individuals with alcohol use disorders are twice as likely to have alcohol dependence compared to individuals without such a family history (Nurnberger et al., 2004). These associations are multi-factorial, with genetic, environmental, and gene-environment interactions contributing (Merikangas & McClair, 2012).

The stress-coping theory also aids our understanding of the adverse effects of SUDs on family members (Copello et al., 2000). SUDs are chronic sources of stress that contribute to negative mental and physical health outcomes for family members (Copello et al., 2000). Alcohol use predicts negative family interactions and marital dissatisfaction (Marshal, 2003). Family members often worry about their relative's substance use patterns and are concerned about their relative's health, financial affairs, and work obligations (Orford et al., 2013). They may cope with these stressors using emotion-based strategies (e.g., anger or self-protection) to reduce their feelings of stress

and to manage their family member's substance use behaviors (Orford et al., 2013). One maladaptive method of coping with this stress may be through personal substance use (Hussong, 2003). Furthermore, having multiple family members with SUDs may compound the stressors experienced and further increase risk of problematic substance use. Accordingly, family density of alcoholism, as measured by the number of relatives with an alcohol use disorder, is associated with both psychiatric disorders (Díaz et al., 2008) and externalizing symptoms (Barnow, Schuckit, Smith, Preuss, & Danko, 2002) among children. It is unclear, however, if family density of substance use problems predicts a greater likelihood of substance use among middle-aged and older adults.

### *Parental Substance Use*

SUDs may also be variably associated with family members' substance use depending on the type of relationship between members. For example, family members of relatives with substance dependence experience different harm depending on their family roles (Corrigan & Miller, 2004). A substantial body of literature examines the effects of parental substance use on children and adolescents' health (Smith & Wilson, 2016). For instance, children who have parents with SUDs demonstrate a greater risk of impaired wellbeing, psychopathology, and substance use problems (Kuppens, Moore, Gross, Lowthian, & Siddaway, 2020; Lander et al., 2013; Park & Schepp, 2015). Parental substance use can influence children through multiple pathways, including life stressors (e.g., family conflict, financial hardship), dysfunctional parenting, emotional unavailability, and the modeling of substance use behaviors (Ellis, Zucker, & Fitzgerald, 1997; Hussong et al., 2008; Peleg-Oren & Teichman, 2006). Moreover, these childhood influences continue into adulthood: Adults who experience parental alcohol problems during childhood often demonstrate poorer stress management and greater risk of depression, anxiety, and SUDs than adults without this exposure (Hall & Webster, 2002; Harter, 2000). There is less known, however, regarding if recent parental substance use influences the risk of SUDs among their already adult-aged children.

### *Partner Substance Use*

Relationship partners may also influence substance use behaviors. Couples often demonstrate concordance (i.e., tendency for couples to share traits) through similar frequencies and patterns of substance use (Leonard & Eiden, 2007; Low, Cui, & Merikangas, 2007). In a process known as assortative mating, individuals select partners with similar substance use patterns as themselves, or they may modify their substance use to align with dyadic patterns after relationship formation (Meacham, Bailey, Hill, Epstein, & Hawkins, 2013). Partners also

typically share other characteristics (e.g., socioeconomic status) that predispose individuals to substance use (Low et al., 2007). For example, alcohol use is often a social activity, and couples generally have interdependent social networks (Homish & Leonard, 2008). A study of older adults identified concordance of alcohol, tobacco, and depressive medication use within couples (Graham & Braun, 1999). Spouses of older adults who engage in problem drinking are more likely to have drinking problems themselves and demonstrate less heavy drinking and fewer alcohol-related problems following relationship termination (Joutsenniemi, Moustgaard, Koskinen, Ripatti, & Martikainen, 2010; Moos, Brennan, Schutte, & Moos, 2010). The literature thus lends support for further examination of dyadic partners' alcohol and substance use behaviors.

### *Child Substance Use*

Surprisingly, the prediction of adolescent or adult children's SUDs impacting the substance use of their parents is not well established despite widespread recognition of similarities between parent and child behaviors (Pardini, 2008). An important exception is a study that found that there are longitudinal bidirectional associations between the smoking behaviors of parents and adolescents (Schuck, Otten, Engels, Barker, & Kleinjan, 2013). According to a survey of adults affected by others' drinking, the majority of problematic drinkers in the home are partners or adult children (Berends, Ferris, & Laslett, 2012). Parents often experience grief and shame when confronted with their children's SUDs (Corrigan & Miller, 2004). Parents who have adult children with SUDs report feelings of emotional distress and impaired wellbeing (Oreo & Ozgul, 2007). Moreover, parents of children with heroin drug use experience complete disruption of their lives and ongoing stress (Butler & Bauld, 2005). It is thus of public health relevance to determine if the substance use of adult children also increases risk of parental SUDs.

### *Gender and Age Differences*

In addition to potential differences by relationship type, gender differences may also impact SUDs among family members. Older adult women are more likely than men to report interpersonal stressors and exposures to partner drinking (Lemke, Schutte, Brennan, & Moos, 2008), and women with alcohol dependence endorse relationship issues as important predictors of their drinking (Green, Pugh, McCrady, & Epstein, 2008). Such evidence lends support for women being at greater risk of being adversely impacted by family members' SUDs. However, in general, men demonstrate greater frequency and quantity of alcohol consumption (Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Gmel, 2009). Therefore, further research is needed to evaluate how gender influences responses to family member SUDs.

Finally, there may be life stage differences in effects of exposures to family member SUDs. There are increasing numbers of multi-generational households, with one in five middle-aged and older adults in the United States now living in households with multiple generations (Cohn & Passel, 2018). Middle-aged adults often have competing demands from parents, partners, and children (Infurna, Gerstorff, & Lachman, 2020; Lima, Allen, Goldscheider, & Intrator, 2008). In contrast, older adults generally no longer have living parents (Perrig-Chiello & Höpflinger, 2005). Middle-aged adults can thus be exposed to parent, partner, and child SUDs, whereas older adults are much less likely to experience parental SUDs. It is thus important to evaluate how these exposures to family member SUDs may differ by life stage.

### *Current Study*

Building on family systems theory and previous work examining the impact of family member SUDs, the study purpose was to evaluate associations of alcohol and other substance use problems (ASP) in the family context with problems related to alcohol use, illicit drug use, and prescription drug misuse among a national sample of adults in midlife and older adulthood. We addressed three related research questions: (1) Are the ASP of parents, partners, and children associated with participants' alcohol- and drug use-related problems? (2) Is having a greater density of family ASP, as measured by the number of family members with ASP, associated with more alcohol- and drug use-related problems? (3) Are there life stage (middle vs. older adult) and gender differences in these patterns of use?

## **Method**

### *Participants and Procedure*

The Midlife in the United States (MIDUS) is a large national survey conducted longitudinally among middle-aged adults (Radler, 2014). MIDUS data are shared as publicly available deidentified datasets. The current study uses secondary data derived from Wave 3 of MIDUS, with participants' Wave 1 alcohol- and drug use-related problems included as covariates. At Wave 1 in 1995–1996, MIDUS respondents aged 20–75 years completed a phone interview and Self-Administered Questionnaire (SAQ) ( $n = 7108$ ). At Wave 3 in 2013–2014, respondents aged 32–93 years ( $n = 3294$ ) from both the original sample and additional subsamples were surveyed. Overall completion rates were 62% (70% response rate  $\times$  89% SAQ completion) for Wave 1 and 64% (77% response rate  $\times$  83% SAQ completion) for Wave 3. Participants with completion of all relevant measures in the interview and SAQ at both Wave 1 and Wave 3 (i.e., were not recruited as part of a secondary subsample at Wave

2) were included in analyses ( $n = 2168$ ). Participants excluded from analyses because of having missing data were more likely to be white ( $p < .05$ ), female ( $p < .05$ ), and non-college educated ( $p < .001$ ), compared to those individuals included. There were no differences in income, age, marriage status, previous alcohol and substance use, or current alcohol and substance use between those included versus excluded from analyses.

## Measures

**Alcohol-Related Problems (Outcome).** Past 12-month alcohol-related problems were measured using the Alcohol Dependence scale of the Composite International Diagnostic Interview (CIDI) Short Form (CIDI-SF) (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). Compared to classifications of the full CIDI scale, which has good established reliability and validity (Wittchen, 1994), the CIDI-SF has 93.6% sensitivity, 96.2% specificity, and overall agreement of 95.8% (Kessler et al., 1998).

Participants first identified any past 12-month use of alcohol. Those participants who endorsed any alcohol use were asked the following seven questions: During the past 12 months... (1) "Were you ever under the effects of alcohol or feeling its after-effects in a situation which increased your chances of getting hurt?"; (2) "Did you ever have any emotional or psychological problems from using alcohol?"; (3) "Did you ever have such a strong desire or urge to use alcohol that you could not resist or could not think of anything else?"; (4) "Did you have a period of a month or more when you spent a great deal of time using alcohol or getting over its effects?"; (5) "Did you ever find that you had to use more alcohol than usual to get the same effect?"; (6) "How many times did you use much larger amounts of alcohol than you intended?"; (7) "How many times have you been under the effects of alcohol while at work or school? Five items (increased chances of getting hurt, emotional problems from use, urge to drink, great deal of time drinking, and drinking more for the same effect) were dichotomous (0 = no, 1 = yes). Two items (role interference and drinking more than intended) were rated on a scale (1 = never to 6 = more than 20 times) then dichotomized (0 = never, 1 = at least once), consistent with original scoring. The Kuder-Richardson 20 (KR20) of the seven items was .71. The questions were summed to create a count measure reflecting an alcohol-related problems score. Individuals without any alcohol use endorsement ( $n = 620$ ) were included in analyses as having zero alcohol-related problems.

## Drug Use-Related Problems (Outcome)

Problems associated with other psychoactive drug use (i.e., illicit drug use and prescription drug misuse) were measured with seven items parallel to the

alcohol-related problems items. Participants first identified past 12-month use (1 = yes) of five illicit substances (inhalants, marijuana, cocaine, hallucinogens, and heroin) and misuse (1 = yes) of five prescription drugs (sedatives, tranquilizers, stimulants, painkillers, and depressive medications). 13% of participants ( $n = 280$ ) endorsed use or misuse of at least one substance over the past 12-months. To assess drug use-related problems, those participants who endorsed using/misusing at least one substance were then asked five dichotomous items (increased chances of getting hurt, emotional problems from use, strong desire for substance, great deal of time using substance, and needing more substance for the same effect) and two items (role interference and taking more substance than intended) that were rated on a scale (1 = never to 6 = more than 20 times) before being dichotomized (0 = never, 1 = at least once). The KR20 of the seven items was .78. The seven problem items were summed to create a count measure reflecting a drug use-related problems variable. Individuals without any endorsement of substance use or misuse ( $n = 1887$ ) were included in analyses as having zero drug use-related problems.

### *Family Member Substance Use (Predictor)*

Family member substance use was evaluated at Wave 3 using three dichotomous questions, with responses coded as 0 = no/not applicable and 1 = yes. These questions were: In the past 12 months... (1) "Did your parent have alcohol or substance problems?" (2% yes); (2) "Did your spouse/partner have alcohol or substance problems?" (3% yes); and (3) "Did your child have alcohol or substance problems?" (9% yes). To reflect any exposure to parent, partner, or child ASP, those individuals without parents ( $n = 1284$ ), partners ( $n = 562$ ), or children ( $n = 314$ ) were coded as not having parent, partner, or child ASP. The density of family ASP variable was created by summing the three dichotomous family ASP variables ( $M = .17$ ,  $SD = .37$ ).

### *Covariates*

Several covariates known to be linked with alcohol and substance use in midlife and older adulthood were assessed. Being younger, white, male, and having higher income are associated with greater substance use (Kuerbis et al., 2014). Higher income, greater educational achievement, and not being married (i.e., being divorced, single, or separated) are associated with unhealthy drinking (i.e., 30+ drinks per month and/or 4+ drinks per day) among older adults (Merrick et al., 2008). We thus controlled for Wave 3 measures of age (years), sex (1 = male), race (1 = White), education (1 = college degree or higher), income (continuous;  $M = \$58,885$ ; range: \$0–\$300,000+), and marriage status (1 = married) in all analyses. Moreover, because of potential



confounding effects for individuals with family members living within the same household versus elsewhere, we included three sensitivity analyses controlling for endorsement of living with a (1) parent, (2) partner/spouse, or (3) child within the past 12 months. Finally, to account for other childhood and genetic factors that predict substance use problems during adolescence or young adulthood, alcohol- and drug use-related problems measured 18 years earlier at Wave 1 were included as covariates, as the full alcohol-related problems scale was not assessed at Wave 2.

### *Analytic Strategy*

All statistical analyses were conducted using R version 3.6.1. Descriptive statistics were computed followed by bivariate analyses (e.g., T-test; chi-squared test; ANOVA) to compare alcohol- and drug use-related problems across the predictor variables. The remainder of analyses used Poisson regression with robust error variance to account for overdispersion (Zou, 2004). First, we assessed multivariable associations of parent, partner, and child ASP with alcohol- and drug use-related problems. We performed sensitivity analyses assessing if the associations of each family ASP variable remained unchanged after accounting for family member co-residence. Secondly, we tested whether the cumulative risk index of family density of ASP predicted alcohol- and drug use-related problems. Finally, we evaluated the interaction of gender with each of the family ASP variables and tested if the associations between family ASP and alcohol-related problems were observed in the middle-aged ( $n = 1,243$ , range: 42–64 years) and older adults ( $n = 925$ , range: 65–93 years) separately. Prevalence of drug use was too rare in older adults to perform the family ASP analyses on drug use-related problems separately for middle-aged and older adults.

## **Results**

### *Demographics and Descriptive Statistics*

Demographic characteristics are summarized in Table 1. Participants were on average 63 years (range = 42–93 years), 54% female, 90% white, 46% college educated, and 78% married. The majority of participants (67%) reported having a spouse or partner living within the same household; 28% reported living with at least one of their children; and 2% reported living with a parent. Alcohol-related problems were more prevalent than drug use-related problems, with 22% of participants endorsing at least one alcohol-related problem indicator and 4% of participants endorsing at least one drug use-related problem.

Participants reporting Wave 3 alcohol-related problems were on average younger ( $t(830) = 10.71$ ,  $p < .001$ ); had higher income ( $t(681) = 5.41$ ,  $p <$

**Table 1.** Descriptive Statistics for Analytic Variables.

Variable	Middle-Aged ( <i>n</i> = 1243)	Older ( <i>n</i> = 925)	<i>p</i> - value	Combined ( <i>n</i> = 2168)
Age, M (SD)	55 (6)	73 (6)	<.001	63 (11)
Female, <i>n</i> (%)	634 (55)	485 (52)	.391	1161 (54)
White Race, <i>n</i> (%)	1129 (91)	830 (90)	.433	1959 (90)
Married, <i>n</i> (%)	890 (72)	762 (82)	<.001	1690 (78)
Income in \$, M (SD)	63,749 (58,206)	52,349 (58,461)	<.001	58,885 (58573)
College Degree, <i>n</i> (%)	610 (49)	382 (41)	<.001	992 (46)
Parent in Household, <i>n</i> (%)	41 (3)	5 (1)	<.001	46 (2)
Partner in Household, <i>n</i> (%)	876 (70)	566 (61)	<.001	1442 (67)
Child in Household, <i>n</i> (%)	511 (41)	102 (11)	<.001	613 (28)
W1 Alcohol Problems	<i>n</i> (%) 420 (34) <i>M</i> (SD) .69 (1.22)	180 (19) .37 (.94)	<.001 <.001	600 (28) .56 (.12)
W3 Alcohol Problems	<i>n</i> (%) 351 (28) <i>M</i> (SD) .51 (1.07)	124(13) .19 (.6)	<.001 <.001	475 (22) .37 (.92)
W1 Drug Problems	<i>n</i> (%) 114 (9) <i>M</i> (SD) .22 (.89)	27 (3) .06 (.39)	<.001 <.001	141 (7) .15 (.71)
W3 Drug Problems	<i>n</i> (%) 74 (6) <i>M</i> (SD) .12 (.59)	21(2) .04 (.36)	<.001 <.001	95 (4) .09 (.51)
W3 Parent ASP, <i>n</i> (%)	32 (3)	-	-	34 (2)
W3 Partner ASP, <i>n</i> (%)	50 (4)	16 (2)	.003	66 (3)
W3 Child ASP, <i>n</i> (%)	112 (9)	82(9)	.967	194 (9)
Family Density of ASP, M (SD)	.16 (.41)	.11 (.32)	<.001	.14 (.37)

Note: W1 = Wave 1; W3 = Wave 3; ASP = Alcohol and Substance Use Problems. Middle-aged sample ages 42–64; Older Adult sample ages 65–93. *p*-value of bivariate analyses comparing middle-aged versus older adults.

.001); were more likely to be college-educated ( $X^2(1) = 20.23, p < .001$ ); and were more likely to be male ( $X^2(1) = 29.16, p < .001$ ). There were no differences in race between participants who endorsed alcohol-related problems versus those who did not ( $X^2(1) = 1.23, p > .05$ ). In addition, participants who endorsed alcohol-related problems were more likely to have children living at home ( $X^2(1) = 12.12, p < .001$ ) but not parents ( $X^2(1) = <.001, p > .05$ ) or partners ( $X^2(1) = .03, p > .05$ ) living at home.

Participants reporting Wave 3 drug use-related problems were on average younger ( $t(106) = 5.96, p < .001$ ); had lower income ( $t(129) = 6.28, p < .001$ ); and were less likely to be college educated ( $X^2(1) = 8.66, p < .01$ ). There were no differences in drug use-related problems by race ( $X^2(1) = .23, p > .05$ ) nor gender ( $X^2(1) = .31, p > .05$ ). There was a significant relationship between drug use-related problems and having a partner living at home ( $X^2(1) = 6.75, p < .01$ ), but there were no relationships between drug use-related problems

and having a child living at home ( $X^2(1) = 3.17, p > .05$ ) nor having a parent living at home ( $X^2(1) = .12, p > .05$ ).

### *Alcohol-Related Problems*

Findings on the first and second research questions assessing net associations between the family ASP variables and alcohol-related problems are summarized in [Table 2](#). Covariates associated with greater risk of alcohol-related problems included being younger ( $p < .001$ ), unmarried ( $p < .05$ ), male ( $p < .001$ ), college-educated ( $p < .05$ ), and having higher income levels ( $p < .01$ ) and previous alcohol-related problems ( $p < .001$ ). Parent ( $p < .05$ ) and partner ( $p < .01$ ) ASP, but not child ASP, predicted greater relative risk of alcohol-related problems. Parent ASP was associated with 1.64 (95% *CI*: 1.00, 2.68) times higher risk of alcohol-related problems, while individuals with partner ASP had 2.08 (95% *CI*: 1.32, 3.27) times higher risk of alcohol-related problems. Family density of ASP predicted alcohol-related problems ( $p < .001$ ), such that for every unit increase in family member ASP, there was 57% increase in risk of alcohol-related problems (95% *CI*: 1.24, 1.98).

### *Life Stage and Gender Differences in Alcohol-Related Problems*

The results of bivariate analyses comparing middle-aged and older adults are summarized in [Table 1](#). Middle-aged adults were on average younger ( $t(1920) = 66.77, p < .001$ ), had higher income ( $t(1986) = 4.50, p < .001$ ), were more likely to be college educated ( $X^2(1) = 12.61, p < .001$ ), had greater density of family ASP ( $t(2158) = 3.31, p < .001$ ), and were less likely to be married ( $X^2(1) = 18.11, p < .001$ ). There were no differences between middle-aged and older adults by gender ( $X^2(1) = .74, p > .05$ ) or race ( $X^2(1) = .61, p > .05$ ). Middle-aged adults were more likely to have parents with ASP ( $X^2(1) = 23.96, p < .001$ ) and spouses with ASP ( $X^2(1) = 8.68, p < .01$ ) than older adults, but there were no differences in experiences of child ASP between middle-aged and older adults ( $X^2(1) = .002, p > .05$ ). Middle-aged adults were also more likely than older adults to be living with a parent ( $X^2(1) = 18.12, p < .001$ ), child ( $X^2(1) = 235.18, p < .001$ ), and partner ( $X^2(1) = 20.12, p < .001$ ). Finally, there were more alcohol-related problems ( $t(2020) = 8.72, p < .001$ ) and drug use-related problems ( $t(2087) = 3.78, p < .001$ ) among middle-aged adults compared to older adults.

[Table 2](#) summarizes the life stage differences in associations between family ASP and participant alcohol-related problems as discussed in the third research question. Among middle-aged adults, parent ( $p < .05$ ) and partner ASP ( $p < .01$ ) predicted greater relative risk of alcohol-related problems, while child ASP was not related ( $p > .05$ ). Similarly, among middle-aged adults, family density of ASP was associated with greater risk of alcohol-related

**Table 2.** Estimated Risk Ratios for Associations Between Family ASP and Alcohol-Related Problems.

Variable	Middle-Aged RR (95% CI)	Older Adults RR (95% CI)	Combined Sample RR (95% CI)
<b>Family ASP</b>			
Parent	1.64 (1.00, 2.68)*	—	1.64 (1.00, 2.68)*
Partner	2.00 (1.23, 3.25)**	2.33 (.62, 8.76)	2.08 (1.32, 3.27)**
Child	1.37 (.92, 2.04)	1.36 (.75, 2.47)	1.36 (.96, 1.92)
Family Density of ASP	1.57 (1.22, 2.02)***	1.52 (.90, 2.58)	1.57 (1.24, 1.98)***
<b>Covariates</b>			
Age	.97 (.95, .99)***	.97 (.94, 1.00)	.96 (.95, .97)***
Male Gender	1.53 (1.22, 1.91)***	1.65 (1.03, 2.40)*	1.56 (1.28, 1.90)***
White Race	.98 (.67, 1.44)	1.73 (.82, 3.36)	1.09 (.77, 1.55)
Married	.77 (.61, .97)*	.81 (.53, 1.53)	.78 (.64, .96)*
Income in \$	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)*	1.00 (1.00, 1.00)**
College Degree	1.24 (.98, 1.57)*	1.34 (.87, 2.08)	1.26 (1.02, 1.55)*
W/ Alcohol Problems	1.48 (1.39, 1.57)***	1.60 (1.44, 1.78)***	1.50 (1.42, 1.59)***

Note: RR = Risk Ratio; W/ = Wave 1; ASP = Alcohol and Substance Use Problems. Middle-aged sample ages 42–64 (n = 1243); Older Adult sample ages 65–93 (n = 925); Combined sample (n = 2168). Family Density ASP coefficients calculated in a separate model.

\*p < .05 \*\*p < .01 \*\*\*p < .001.

problems ( $p < .001$ ). Among older adults, none of these variables were predictive of alcohol-related problems ( $p > .05$ ). However, it is worth noting that only  $n = 16$  older adults reported having a partner with an ASP. There were also no significant gender interactions ( $p > .05$ ). These associations were independent of tendencies for younger, male, unmarried, college educated, and prior alcohol-related problems respondents to report greater alcohol-related problems.

### *Drug Use-Related Problems*

Findings on the first and second research questions assessing associations between the family ASP variables and drug use-related problems are summarized in Table 3. Covariates associated with greater risk of drug use-related problems included being male ( $p < .05$ ), not being married ( $p < .01$ ), having greater income ( $p < .01$ ), and having previous drug use-related problems ( $p < .001$ ). Past 12-month partner ASP predicted 4.66 times greater risk of drug use-related problems ( $p < .01$ ). Neither parent ASP ( $p > .05$ ), child ASP ( $p > .05$ ), nor having more family members with ASP ( $p > .05$ ) were associated with greater drug use-related problems. There were no significant gender interactions, and differences by life stage were not tested due to low prevalence of drug use-related problems among older adult respondents ( $n = 21$ ).

### *Sensitivity Analysis*

In sensitivity analyses, the gross effects of parent, partner, and child ASP on alcohol- and drug use-related problems were evaluated both with and without covariates of family member co-residence. Parent [( $RR = 1.67, p = .04$ ) vs. ( $RR = 1.70, p = .04$ )], partner [( $RR = 2.26, p < .001$ ) vs. ( $RR = 2.20, p < .01$ )], and child ASP [( $RR = 1.46, p < .001$ ) vs. ( $RR = 1.45, p < .001$ )] significantly predicted alcohol-related problems with and without family member co-residence. In separate gross models assessing drug use-related problems, parent ASP [( $RR = 1.04, p > .05$ ) vs. ( $RR = 1.03, p > .05$ )] and child ASP [( $RR = .97, p > .05$ ) vs. ( $RR = .96, p > .05$ )] were not associated with drug use-related problems with or without having a parent or child in the household. Partner ASP was significantly predictive [( $RR = 4.14, p < .01$ ) vs. ( $RR = 3.97, p < .01$ )] with and without covariates of having a partner living within the same household.

### **Discussion**

The overall study goal was to assess relationships between having family members with ASP and alcohol- and drug use-related problems in a national sample of middle-aged and older adults. The pattern of results provides support

**Table 3.** Estimated Risk Ratios for Associations Between Family ASP and Drug Use-Related Problems.

Variables		Drug Use-Related Problems RR (95% CI)
Family ASP	Parent	.94 (.21, 4.25)
	Partner	4.66 (1.75, 12.46)**
	Child	.79 (.36, 1.74)
	Family Density of ASP	1.47 (.89, 2.44)
Covariates	Age	.99 (.93, 1.05)
	Male Gender	2.09 (1.37, 3.18)*
	Race	.66 (.28, 1.54)
	Marriage Status	.38 (.19, .79)**
	Income	1.00 (1.00, 1.00)**
	College Degree	1.07 (.49, 2.33)
	W1 Drug Use Problems	1.51 (1.26, 1.80)***

RR = Risk Ratio; ASP = Alcohol and Substance Use Problems; W1 = Wave 1. Sample ages 42–93 ( $n = 2168$ ). Family Density ASP coefficients calculated in a separate model.

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

for links between parent and partner ASP with alcohol-related problems, particularly among middle-aged adults in their 40s to mid-60 years. Partner ASP, but not parent nor child ASP, was also associated with participants' drug use-related problems. These findings remained consistent in sensitivity analyses controlling for having parents, partners, or children living in the same household as the respondent. In addition, gender did not moderate the relationships between the family ASP variables and alcohol-related problems or drug use-related problems. Finally, having more family members with ASP predicted alcohol-related problems but not drug use-related problems.

None of the family ASP variables were predictive of alcohol-related problems within the older adult subsample. These null findings should be interpreted cautiously due to potentially low power to detect such differences within this sample. Specifically, the low prevalence of older adults with partner ASP likely contributed to the large standard error of partner ASP among the older adult subsample. Future studies should address this question with larger samples of middle-aged and older adults who evidence greater and more harmful levels of alcohol and substance use, such as those receiving treatment for alcohol or drug problems. These studies could also assess potential mechanisms linking these associations (e.g., stress-coping pathways). It was also surprising that there was no evidence of gender interactions between the family ASP variables and alcohol or drug use-related problems. However, there was a main effect of males demonstrating greater relative risk

of alcohol- and drug use-related problems, consistent with existing literature (e.g., Kuerbis et al., 2014).

Results extend past research examining the concordance of ASPs among family members. Previous research assessing parental SUDs has largely focused on childhood exposures (e.g., Park & Schepp, 2015), while these current findings lend support for additional associations between recent parental ASP and the alcohol-related problems of their adult children. The findings did not, however, suggest that the ASP of adult children is linked to parental use. Parents of children with SUDs often report feelings of stress and distress (e.g., Oreo & Ozgul, 2007), but the current findings did not indicate any increased risk of alcohol or drug use-related problems among parents of children with ASP. In addition, the study also reaffirms previous research on the concordance of partner alcohol and substance use (e.g., Joutsenniemi et al., 2010). Finally, the findings contribute to a growing literature assessing family density of ASP, which has largely focused on family density of SUDs as it relates to children (e.g., Diaz et al., 2008). In particular, this study fills a valuable gap in assessing how having more family members with ASP may be associated with increased risk of alcohol-related problems among adults.

### *Limitations and Future Directions*

There are several study limitations. First, although we were able to control for alcohol- and drug use-related problems two decades earlier, the analyses are primarily cross-sectional, so temporality among the primary variables cannot be determined. Longitudinal research is necessary to better understand the sequence of observed relationships. Moreover, a design with more frequent and nuanced measurement of alcohol and substance use could assess the relationships between changes in family ASP with alcohol- and drug use-related problems. Further, the outcome measures captured problems related to alcohol and psychoactive drug use only. Future studies should include measures assessing other dimensions of use, including consumption amount and other relevant patterns of use. Finally, it would be informative to evaluate the effects of other family members (e.g., siblings).

### **Conclusion**

Overall study findings lend support for substance use affecting multiple members within the family system. Although it is not possible to establish temporality of the associations, the findings demonstrate a need for evaluating substance use within the family context, regardless of which family member's substance use preceded the other family members' substance use. For example, in the context of research, family member substance use can quickly and effectively be evaluated using surveys such as the Family CAGE

questionnaire, which has acceptable validity, sensitivity, and specificity (Basu, Ghosh, Hazari, & Parakh, 2016). In addition, there are also significant clinical implications of treating substance use as a process within the family context instead of as simply an individual behavior. Screening for family members' ASP may be valuable for identifying individuals in need of treatment, tailoring treatment services to incorporate affected family members (e.g., through family therapy), and preventing substance use from continuing its adverse effects intergenerationally.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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### ORCID iD

Sara E. Miller  <https://orcid.org/0000-0003-3372-4585>

### References

- Ajrouch, K. J., Antonucci, T. C., & Janevic, M. R. (2001). Social networks among blacks and whites: The interaction between race and age. *The Journals of Gerontology: Series B*, 56(2), S112–S118. <https://doi.org/10.1093/geronb/56.2.s112>
- Antonucci, T. C., Akiyama, H., & Takahashi, K. (2004). Attachment and close relationships across the life span. *Attachment & Human Development*, 6(4), 353–370. <https://doi.org/10.1080/1461673042000303136>
- Arndt, S., Clayton, R., & Schultz, S. K. (2011). Trends in substance abuse treatment 1998–2008: Increasing older adult first-time admissions for illicit drugs. *The American Journal of Geriatric Psychiatry: Official Journal of the American Association for Geriatric Psychiatry*, 19(8), 704–711. <https://doi.org/10.1097/JGP.0b013e31820d942b>
- Barnow, S., Schuckit, M., Smith, T. L., Preuss, U., & Danko, G. (2002). The relationship between the family density of alcoholism and externalizing symptoms among 146 children. *Alcohol and Alcoholism*, 37(4), 383–387. <https://doi.org/10.1093/alcalc/37.4.383>
- Barry, K. L., & Blow, F. C. (2016). Drinking over the lifespan: Focus on older adults. *Alcohol Research: Current Reviews*, 38(1), 115–120.



- Basu, D., Ghosh, A., Hazari, N., & Parakh, P. (2016). Use of Family CAGE-AID questionnaire to screen the family members for diagnosis of substance dependence. *The Indian Journal of Medical Research*, 143(6), 722–730. <https://doi.org/10.4103/0971-5916.191931>
- Berends, L., Ferris, J., & Laslett, A.-M. (2012). A problematic drinker in the family: Variations in the level of negative impact experienced by sex, relationship and living status. *Addiction Research & Theory*, 20(4), 300–306. <https://doi.org/10.3109/16066359.2011.629061>.
- Birditt, K. S., Jackey, L. M. H., & Antonucci, T. C. (2009). Longitudinal patterns of negative relationship quality across adulthood. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 64(1), 55–64. <https://doi.org/10.1093/geronb/gbn031>
- Bowen, M. (1974). Alcoholism as viewed through family systems theory and family psychotherapy. *Annals of the New York Academy of Sciences*, 233(1), 115–122. <https://doi.org/10.1111/j.1749-6632.1974.tb40288.x>
- Breslow, R. A., Castle, I. P., Chen, C. M., & Graubard, B. I. (2017). Trends in alcohol consumption among older Americans: National Health Interview Surveys, 1997 to 2014. *Alcoholism, Clinical and Experimental Research*, 41(5), 976–986. <https://doi.org/10.1111/acer.13365>
- Butler, R., & Bauld, L. (2005). The parents' experience: Coping with drug use in the family. *Drugs: Education, Prevention and Policy*, 12(1), 35–45. <https://doi.org/10.1080/0968763042000275308>
- Chhatre, S., Cook, R., Mallik, E., & Jayadevappa, R. (2017). Trends in substance use admissions among older adults. *BMC Health Services Research*, 17(1), 584. <https://doi.org/10.1186/s12913-017-2538-z>
- Cohn, D., & Passel, J. (2018). *A record 64 million Americans live in multigenerational households*. Pew Research Center. Retrieved from <https://www.pewresearch.org/fact-tank/2018/04/05/a-record-64-million-americans-live-in-multigenerational-households/>
- Copello, A., Orford, J., Velleman, R., Templeton, L., & Krishnan, M. (2000). Methods for reducing alcohol and drug related family harm in non-specialist settings. *Journal of Mental Health*, 9(3), 329–343. <https://doi.org/10.1080/713680252>
- Corrigan, P. W., & Miller, F. E. (2004). Shame, blame, and contamination: A review of the impact of mental illness stigma on family members. *Journal of Mental Health*, 13(6), 537–548. <https://doi.org/10.1080/09638230400017004>
- Cowan, P. A., & Cowan, C. P. (2006). Developmental psychopathology from family systems and family risk factors perspectives: Implications for family research, practice, and policy. In D. Cicchetti, & D. J. Cohen (Eds.). *Developmental psychopathology: Theory and method* (2nd ed., Vol. 1, pp. 530–587). Hoboken, NJ: John Wiley & Sons, Inc.
- Díaz, R., Gual, A., García, M., Arnau, J., Pascual, F., Cañuelo, B., & Garbayo, I. (2008). Children of alcoholics in Spain: From risk to pathology. Results from the

- ALFIL program. *Social Psychiatry and Psychiatric Epidemiology*, 43(1), 1–10. <https://doi.org/10.1007/s00127-007-0264-2>
- Ellis, D. A., Zucker, R. A., & Fitzgerald, H. E. (1997). The role of family influences in development and risk. *Alcohol Health and Research World*, 21(3), 218–226.
- English, T., & Carstensen, L. L. (2014). Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *International Journal of Behavioral Development*, 38(2), 195–202. <https://doi.org/10.1177/0165025413515404>
- Farmer, R. F., Kosty, D. B., Seeley, J. R., Gau, J. M., & Klein, D. N. (2019). Family aggregation of substance use disorders: Substance specific, nonspecific, and intrafamilial sources of risk. *Journal of Studies on Alcohol and Drugs*, 80(4), 462–471. <https://doi.org/10.15288/jsad.2019.80.462>
- Graham, K., & Braun, K. (1999). Concordance of use of alcohol and other substances among older adult couples. *Addictive Behaviors*, 24(6), 839–856. [https://doi.org/10.1016/s0306-4603\(99\)00059-3](https://doi.org/10.1016/s0306-4603(99)00059-3)
- Green, K. E., Pugh, L. A., McCrady, B. S., & Epstein, E. E. (2008). Unique aspects of female-primary alcoholic relationships. *Addict Disord Their Treat*, 7(3), 169–176. <https://doi.org/10.1097/ADT.0b013e31814c3f94>
- Hall, C. W., & Webster, R. E. (2002). Traumatic symptomatology characteristics of adult children of alcoholics. *J Drug Educ*, 32(3), 195–211. <https://doi.org/10.2190/U29W-LF3W-748L-A48M>
- Han, B., Gfroerer, J. C., Colliver, J. D., & Penne, M. A. (2009). Substance use disorder among older adults in the United States in 2020. *Addiction*, 104(1), 88–96. <https://doi.org/10.1111/j.1360-0443.2008.02411.x>
- Harter, S. L. (2000). Psychosocial adjustment of adult children of alcoholics: A review of the recent empirical literature. *Clinical Psychology Review*, 20(3), 311–337. [https://doi.org/10.1016/s0272-7358\(98\)00084-1](https://doi.org/10.1016/s0272-7358(98)00084-1)
- Heuberger, R. A. (2009). Alcohol and the older adult: A comprehensive review. *Journal of Nutrition For the Elderly*, 28(3), 203–235. <https://doi.org/10.1080/01639360903140106>
- Homish, G. G., & Leonard, K. E. (2008). The social network and alcohol use. *Journal of Studies on Alcohol and Drugs*, 69(6), 906–914. <https://doi.org/10.15288/jsad.2008.69.906>
- Hussong, A. M. (2003). Further refining the stress-coping model of alcohol involvement. *Addictive Behaviors*, 28(8), 1515–1522. [https://doi.org/10.1016/s0306-4603\(03\)00072-8](https://doi.org/10.1016/s0306-4603(03)00072-8)
- Hussong, A. M., Bauer, D. J., Huang, W., Chassin, L., Sher, K. J., & Zucker, R. A. (2008). Characterizing the life stressors of children of alcoholic parents. *Journal of Family Psychology*, 22(6), 819–832. <https://doi.org/10.1037/a0013704>
- Infurna, F. J., Gerstorf, D., & Lachman, M. E. (2020). Midlife in the 2020s: Opportunities and challenges. *The American Psychologist*, 75(4), 470–485. <https://doi.org/10.1037/amp0000591>

- Joutsenniemi, K., Moustgaard, H., Koskinen, S., Ripatti, S., & Martikainen, P. (2010). Psychiatric comorbidity in couples: A longitudinal study of 202, 959 married and cohabiting individuals. *Social Psychiatry and Psychiatric Epidemiology*, 46(7), 623–633. <https://doi.org/10.1007/s00127-010-0228-9>
- Kessler, R. C., Andrews, G., Mroczek, D., Ustun, B., & Wittchen, H.-U. (1998). The World Health Organization Composite International Diagnostic Interview short-form (CIDI-SF). *International Journal of Methods in Psychiatric Research*, 7(4), 171–185. <https://doi.org/10.1002/mp.47>
- Khan, N., Davis, P., Wilkinson, T. J., Sellman, J. D., & Graham, P. (2002). Drinking patterns among older people in the community: Hidden from medical attention? *The New Zealand Medical Journal*, 115(1148), 72–75.
- Krause, N., & Rook, K. S. (2003). Negative interaction in late life: Issues in the stability and generalizability of conflict across relationships. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 58(2), P88–P99. <https://doi.org/10.1093/geronb/58.2.p88>
- Kuerbis, A., Sacco, P., Blazer, D. G., & Moore, A. A. (2014). Substance abuse among older adults. *Clinics in Geriatric Medicine*, 30(3), 629–654. <https://doi.org/10.1016/j.cger.2014.04.008>
- Kuppens, S., Moore, S. C., Gross, V., Lowthian, E., & Siddaway, A. P. (2020). The enduring effects of parental alcohol, tobacco, and drug use on child well-being: A multilevel meta-analysis. *Development and Psychopathology*, 32(2), 765–778. <https://doi.org/10.1017/S0954579419000749>
- Lander, L., Howsare, J., & Byrne, M. (2013). The impact of substance use disorders on families and children: From theory to practice. *Social Work in Public Health*, 28(3–4), 194–205. <https://doi.org/10.1080/19371918.2013.759005>
- Lemke, S., Schutte, K. K., Brennan, P. L., & Moos, R. H. (2008). Gender differences in social influences and stressors linked to increased drinking. *Journal of Studies on Alcohol and Drugs*, 69(5), 695–702. <https://doi.org/10.15288/jsad.2008.69.695>
- Leonard, K. E., & Eiden, R. D. (2007). Marital and family processes in the context of alcohol use and alcohol disorders. *Annual Review of Clinical Psychology*, 3, 285–310. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091424>
- Lima, J. C., Allen, S. M., Goldscheider, F., & Intrator, O. (2008). Spousal caregiving in late midlife versus older ages: Implications of work and family obligations. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(4), S229–S238. <https://doi.org/10.1093/geronb/63.4.s229>
- Low, N., Cui, L., & Merikangas, K. R. (2007). Spousal concordance for substance use and anxiety disorders. *Journal of Psychiatric Research*, 41(11), 942–951. <https://doi.org/10.1016/j.jpsychires.2006.11.003>
- Marshal, M. P. (2003). For better or for worse? The effects of alcohol use on marital functioning. *Clinical Psychology Review*, 23(7), 959–997. <https://doi.org/10.1016/j.cpr.2003.09.002>
- Meacham, M. C., Bailey, J. A., Hill, K. G., Epstein, M., & Hawkins, J. D. (2013). Alcohol and tobacco use disorder comorbidity in young adults and the influence

- of romantic partner environments. *Drug and Alcohol Dependence*, 132(1–2), 149–157. <https://doi.org/10.1016/j.drugalcdep.2013.01.017>.
- Merikangas, K. R., & McClair, V. L. (2012). Epidemiology of substance use disorders. *Hum Genet*, 131(6), 779–789. <https://doi.org/10.1007/s00439-012-1168-0>.
- Merrick, E. L., Horgan, C. M., Hodgkin, D., Garnick, D. W., Houghton, S. F., Panas, L., & Blow, F. C. (2008). Unhealthy drinking patterns in older adults: Prevalence and associated characteristics. *Journal of the American Geriatrics Society*, 56(2), 214–223. <https://doi.org/10.1111/j.1532-5415.2007.01539.x>
- Moos, R. H., Brennan, P. L., Schutte, K. K., & Moos, B. S. (2010). Spouses of older adults with late-life drinking problems: Health, family, and social functioning. *Journal of Studies on Alcohol and Drugs*, 71(4), 506–514. <https://doi.org/10.15288/jsad.2010.71.506>.
- Nemes, S., Rao, P. A., Zeiler, C., Munly, K., Holtz, K. D., & Hoffman, J. (2004). Computerized screening of substance abuse problems in a primary care setting: Older vs. younger adults. *The American Journal of Drug and Alcohol Abuse*, 30(3), 627–642. <https://doi.org/10.1081/ada-200032312>.
- Nurnberger, J. I., Jr., Wiegand, R., Bucholz, K., O'Connor, S., Meyer, E. T., Reich, T., Rice, J., Schuckit, M., King, L., Petti, T., Bierut, L., Hinrichs, A. L., Kuperman, S., Hesselbrock, V., & Porjesz, B. (2004). A family study of alcohol dependence: coaggregation of multiple disorders in relatives of alcohol-dependent probands. *Archives of general psychiatry*, 61(12), 1246–1256. <https://doi.org/10.1001/archpsyc.61.12.1246>.
- Oreo, A., & Ozgul, S. (2007). Grief experiences of parents coping with an adult child with problem substance use. *Arthritis Research & Therapy*, 15(1), 71–83. <https://doi.org/10.1080/16066350601036169>.
- Orford, J., Natera, G., Copello, A., Atkinson, C., Mora-Rios, J., Velleman, R., & Walley, G. (2013). *Coping with alcohol and drug problems: The experiences of family members in three contrasting cultures*. Taylor & Francis.
- Pardini, D. A. (2008). Novel insights into longstanding theories of bidirectional parent-child influences: Introduction to the special section. *Journal of Abnormal Child Psychology*, 36(5), 627–631. <https://doi.org/10.1007/s10802-008-9231-y>
- Park, S., & Schepp, K. G. (2015). A systematic review of research on children of alcoholics: Their inherent resilience and vulnerability. *Journal of Child and Family Studies*, 24(5), 1222–1231. <https://doi.org/10.1007/s10826-014-9930-7>
- Parolin, M., Simonelli, A., Mapelli, D., Sacco, M., & Cristofalo, P. (2016). Parental substance abuse as an early traumatic event. Preliminary findings on neuropsychological and personality functioning in young drug addicts exposed to drugs early. *Front Psychol*, 7, 887. <https://doi.org/10.3389/fpsyg.2016.00887>
- Peleg-Oren, N., & Teichman, M. (2006). Young children of parents with substance use disorders (SUD): A review of the literature and implications for social work practice. *Journal of Social Work Practice in the Addictions*, 6(1–2), 49–61. [https://doi.org/10.1300/j160v06n01\\_03](https://doi.org/10.1300/j160v06n01_03)

- Perrig-Chiello, P., & Höpflinger, F. (2005). Aging parents and their middle-aged children: Demographic and psychosocial challenges. *European Journal of Ageing*, 2(3), 183–191. <https://doi.org/10.1007/s10433-005-0003-z>
- Radler, B. T. (2014). The Midlife in the United States (MIDUS) Series: A national longitudinal study of health and well-being. *Open Health Data*, 2(1), e3. <https://doi.org/10.5334/ohd.ai>
- Ray, G. T., Mertens, J. R., & Weisner, C. (2007). The excess medical cost and health problems of family members of persons diagnosed with alcohol or drug problems. *Medical Care*, 45(2), 116–122. <https://doi.org/10.1097/01.mlr.0000241109.55054.04>
- Schuck, K., Otten, R., Engels, R. C. M. E., Barker, E. D., & Kleinjan, M. (2013). Bidirectional influences between parents and children in smoking behavior: A longitudinal full-family model. *Nicotine & Tobacco Research*, 15(1), 44–51. <https://doi.org/10.1093/ntr/nts082>
- Smith, V. C., & Wilson, C. R. (2016). Families affected by parental substance use. *Pediatrics*, 138(2), e20161575. <https://doi.org/10.1542/peds.2016-1575>
- Weisner, C., Parthasarathy, S., Moore, C., & Mertens, J. R. (2010). Individuals receiving addiction treatment: Are medical costs of their family members reduced? *Addiction*, 105(7), 1226–1234. <https://doi.org/10.1111/j.1360-0443.2010.02947.x>
- Wilsnack, R. W., Wilsnack, S. C., Kristjanson, A. F., Vogeltanz-Holm, N. D., & Gmel, G. (2009). Gender and alcohol consumption: Patterns from the multinational GENACIS project. *Addiction (Abingdon, England)*, 104(9), 1487–1500. <https://doi.org/10.1111/j.1360-0443.2009.02696.x>
- Wittchen, H.-U. (1994). Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): A critical review. *Journal of Psychiatric Research*, 28(1), 57–84. [https://doi.org/10.1016/0022-3956\(94\)90036-1](https://doi.org/10.1016/0022-3956(94)90036-1)
- Wu, L. T., & Blazer, D. G. (2011). Illicit and nonmedical drug use among older adults: A review. *J Aging Health*, 23(3), 481–504. <https://doi.org/10.1177/0898264310386224>
- Zou, G. (2004). A modified poisson regression approach to prospective studies with binary data. *American Journal of Epidemiology*, 159(7), 702–706. <https://doi.org/10.1093/aje/kwh090>