FACTORS RELATED TO ALCOHOL-USE DISORDERS AND PERCEPTIONS OF TREATMENT NEED AMONG BABY BOOMERS ACROSS THE LIFE COURSE: IMPLICATIONS FOR SOCIAL WORK THEORY, RESEARCH, AND PRACTICE

by

ADAM EWELL QUINN

(Under the Direction of Orion Mowbray)

ABSTRACT

This dissertation reports on three studies related to alcohol-use disorders among baby boomers across the life course. The first study reports findings from a scoping review of 25 years of literature, focusing on the extent to which baby boomers are represented, as well as what treatments are effective across differential levels of study-design rigor. Among the most rigorously designed studies, cognitive behavior-based therapies and motivational-enhancement therapies were found to be potential candidates for effective alcohol use treatment among baby boomers. The second study explores changes in highly salient factors predicting alcohol-use disorders among baby boomers from a life course theoretical framework. This study found that, while predictive factors of alcohol-use disorders changed as baby boomers aged, the underlying trend suggested that factors characteristic of impulsivity remained across time. The third study explores salient predictors of alcohol-use among baby boomers who deny treatment need at two time periods. The results from this study suggest that brief generalized alcohol treatment may be ineffective in the treatment of baby boomers with alcohol-use disorders. Rather, as baby boomers enter older-adulthood, tailored interventions are needed in order to provide effective

treatment for this large birth cohort. Each study discusses social work practice and future research recommendations. The final chapter concludes this dissertation providing implications related to social work policy.

INDEX WORDS: alcohol use disorders, life course perspective, baby boomers, alcohol treatment, treatment need, older adults

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CHAPTER 1

INTRODUCTION

During the past fifteen years, researchers, practitioners, and policy-makers in the United States have become aware of changes in patterns of alcohol use among older adults, particularly in the coming decades of the 21st century. Research suggests that the baby-boomer cohort, defined as those individuals born between 1946 and 1964, may possess increased rates of late-life alcohol use compared to previous older-adult cohorts (Colby & Ortman, 2014; Gfroerer, Penne, Pemberton, & Folsom, 2003). Moreover, Gfroerer et al.'s (2003) study projected that the number of adults age 60 or older requiring alcohol use treatment would increase from 688,000 in 2000/2001 to 2.3 million in 2020, an increase of 134% or about 3 times the treatment need from 2000/2001. This trend is expected to continue as the last of baby-boomer cohort does not reach age 60 until 2024 and age 65 until 2029.

Research studies examining alcohol use disorders among older adults tend to vary with regard to definition. Some studies define an older adult to be age 50 or older. Other studies delimit the term "older adult" as any person 60 years of age or older, and refer to adults between 50 and 60 years old as "late-middle-aged" (Moos, Brennan, Schutte, & Moos, 2010; Simoni-Wastila & Yang, 2006). In comparison, reports using U.S Census Bureau data tend to define older adults as age 65 or older. Moreover, in the U.S., age 65 is usually considered a milestone related to retirement age, although the Social Security Administration (2014) has considered age 67 to be the full retirement age since 1960. In this dissertation, the definition of older adult will generally be considered adults age 60 or older, with exceptions when certain Census Bureau data

is considered. However, when considering the baby-boomer cohort in this summary section of this dissertation, in general 65 years or older may be used as a marker toward gaining perspective on future trends in population growth among older adults, as will be discussed below.

In 2010, the year prior to the first baby-boomers turning 65, the number of U.S. adults 65 years or older was 40.2 million (U.S Census Bureau, 2011). In contrast, when the last of the baby-boomer cohort turns 65 in 2029 the U.S. Census Bureau (2012) projects that approximately 71.4 million adults will be 65 years or older. During this period (i.e., 2011-2029), the population of older adults in the U.S. age 65 or older will increase approximately 78%, while the total U.S. population will increase by approximately 17%, and the population of individuals under 65 years of age will increase by only 6%. The baby-boomer cohort will impact the U.S. population distribution substantially over at least the next 50 years. With the overall population impact of the baby-boomer cohort in mind, and with the projected increase in alcohol use among this unprecedentedly large, aging cohort, the importance of developing novel theory, research, and treatment models is difficult to ignore.

Alcohol-use research among older adults: Past and present

Among older adults, research suggests that this population in general tends to use alcohol and other legal drugs (i.e., prescription and non-prescription medications) more often than illicit drugs such as marijuana, cocaine, and heroin; though alcohol use tends to decline with age (Memmott, 2003; Simoni-Wastila & Yang, 2006). In addition, older adults' concurrent use of alcohol and prescription medication has become a growing concern as studies suggest that adverse drug reactions among older adults are related to increased hospitalization admission and mortality (Petrovic, van der Cammen, & Onder, 2012). However, in recent years research findings have suggested a change in drug usage patterns among the late-middle-aged baby-

boomer cohort (i.e., those adults who will be entering into their 60s in this decade), signaling a need for ongoing studies. In particular, adults aged 50 to 59 were found to possess higher rates of marijuana and non-medical prescription drug use compared to their cross-sectional counterparts 60 years or older (i.e., non-baby boomers). Moreover, marijuana use was more prevalent than non-medical prescription drug use among the 50 to 59 group (SAMHSA, 2013). In addition, a study reported that adults aged 50 to 64 possessed higher rates of non-medical prescription drug use compared to those 65 years or older (Wu & Blazer, 2011). Whereas in the past, a higher rate of "aging out" of alcohol use was found among older adults, research suggests that this may not be the case among baby boomers. These findings suggest that in the coming decades, as the baby-boomer generation enters into older adulthood, changes in alcohol use patterns and behaviors may emerge (Gfroerer et al., 2003).

Likewise, as changes in patterns of older adult alcohol use are ushered in with the aging baby-boomer cohort, new frameworks for understanding these patterns may be needed. In particular, the life course theory has received attention in recent years regarding its theoretical viability in understanding alcohol use among older-adult baby boomers (Anstey, 2008; Barrett & Toothman, 2014; Stowe & Cooney, 2015).

The life course theory: A novel framework for understanding older-adult alcohol use

The life course theory of human development emerged as an influential theory of aging in the 1970s, with initial contributions by Elder (1975) in the field of sociology. Elder (1975) suggested that a life course theory would require attention to the temporal dimensions of aging, including (a) chronological age as an index within which the stages of the aging process could be measured, (b) social age, such as marriage and retirement, as a way to understand the affect of norms and social roles in the aging process, and (c) historical age which referred to a person's

birth year or the particular location in history in which a person and his or her cohort lived (Elder, 1985; 1994).

Broadly defined, the life course theory attempts to explain an individual's lifespan as a set of interwoven trajectories or pathways that are subject to alteration contingent upon immediate conditions, future options, and short-term transitions which emerge throughout life and which are rooted in an individual's cultural and social traditions (Elder, 1994). In this way, trajectories, transitions, and turning points are considered primary constructs in understanding the complex web of the human life course. Trajectories refer to long-term patterns of behavior composed of sequences of embedded transitions. Transitions are used to describe shorter-term spans of time during which significant events occur, such as leaving school, establishing a job, becoming pregnant, or committing a crime, which may trigger both short- and long-term consequences across the life course. Turning points are those events that are triggered by the interplay of trajectories and embedded transitions or may be adaptations to transition events that have otherwise resulted in later consequences. The means through which an individual can manage transitions and turning points may result in varying stress-response patterns which are thought to affect the emergence of health-promoting or health-inhibiting behaviors (Hser, Longshore, & Anglin, 2007).

Using trajectories, transitions, and turning points as conceptual anchors, the life course theory provides analytical tools through which to understand the age-differentiated lifespan. For example, an individual's lifetime health outcomes may be viewed as a complex system of exposures or risk factors that interact with biological processes impacting the development of disease. Exposures to health-related risk factors are thought to occur early in life and/or at specific periods throughout life. These critical periods or transition events, during which an

individual experiences exposure to risk factors, such as loss of employment, increased financial demands, or divorce, may substantially alter the intensity of the exposures and, subsequently, an individual's long-term health trajectory (Anstey, 2008). In addition, the life course theory may be a strong candidate for applications in alcohol use disorder research and practice.

Strengths and weaknesses of the life course theory

The life course theory provides a broadly defined conceptual framework that has continued to evolve over the past 40 years. In general, theorists and researchers have relied upon Elder's (1985; 1994; 1998) theoretical underpinnings in order to establish unity and stability in the theory. Although many have introduced additional characteristics to the life course theory in the course of specific applications of the theory, overarching constructs encompassing trajectories, transitions, and turning points have remained. Moreover, George (1993) suggested three common principles that differentiate the life course theory from other theories: (a) distinct from life span, which describes the duration of life, the life course is a socio-historical phenomenon, (b) trajectories, transitions, and turning points are key concepts, and (c) the life course theory requires a longitudinal outlook with regard to research. In addition, the life course theory emphasizes the intersection of individuals' lives, social structure, social change, and roots individuals in time and place. Therefore, the life course theory is a strong candidate for developing a theoretical framework toward explaining patterns of alcohol use disorders in older adults.

However, the life course theory is a theoretical framework that was developed within the context of roles and life event timings considered to be normative within a traditional, Westernized value system. As a result the life course theory may fail to account for historical antecedents that have greatly impacted oppressed populations living in the U.S., racial/ethnic

groups in particular. That is, while the life course theory emphasizes the impact upon the individual by the immediate and ongoing socio-historical contexts within that individual's lifetime, the theory may fail to recognize centuries-long antecedents that have shaped the cultural landscape, specifically for persons-of-color, which arguably impact both an individual's opportunities and exposures to risk. For example, theorists have suggested that the quality and strength of social ties during life course transitions may be more important than the temporal characteristics or timing of discrete life events (Laub & Sampson, 1993).

Social capital is a related construct to what Laub & Sampson (1993) described above, and a construct that the life course theory may underemphasize. At a community or neighborhood level, social capital refers to the networks of social ties between community members and the pathways through which these networks foster support to families and individuals (Portes & Vickstrom, 2011). In addition, within the alcohol use disorder literature, a "recovery capital" construct has been suggested (Granfield & Cloud, 2001). In brief, recovery capital envelopes four types of capital: (a) social capital, defined above, (b) physical capital, or financial assets that either directly provide monetary income, and/or other financial assets that can be converted to money (i.e., liquidated), (c) human capital, or those individual attributes thought to affect a person's ability to overcome alcohol use disorders (e.g., heredity, mental health, employability), and (d) cultural capital (i.e., those individuals who are more likely to accept conventional norms of a culture are also more likely to engage in recovery-related behaviors compared to individuals that reject cultural norms; Cloud & Granfield, 2008). Although recovery capital provides a more expanded view of different types of capital that may influence alcohol use cessation, the construct may require further work, particularly with regard to certain implications. For example, problematic are the suggestions that heredity – an historically controversial issue in the

study of drug addiction (Schuckit, 2014) - and cultural conformity are necessary for successful recovery. As stated earlier, the existence of historical and ongoing oppression of racial/ethnic minority groups may require substantial revisions in theories of alcohol use disorders, including the life course theory. While Cloud & Granfield's (2008) recovery capital model may be a important step forward, their cultural capital construct may require further thought – which the authors acknowledge. Encouraging racial/ethnic individuals to conform to a historically oppressive society may not be appropriate, even under the guise of alcohol use recovery; the means may not justify the ends.

In summary, as an explanatory framework for patterns of alcohol use disorders in older adults, a social capital component – and possibly a future recovery capital component - that emphasizes the quality and strength of social ties across the lifespan may be of benefit in strengthening the life course theory.

Clinical applications of the life course theory related to substance- and alcohol-use

Application of the life course theory in the analysis of patterns of substance use disorders is a relatively recent area of focus in the study of substance/alcohol use and addiction. Moreover, among the handful of studies, substance use in general has been more frequently studying than alcohol use in particular. In the past decade, a number of longitudinal studies of substance-using cohorts have been reported in the literature. Many of these studies were originally conducted within the framework of testing competing theories of patterns of substance use disorders, such as the addiction career theory and the "gateway" hypothesis. These latter perspectives will be reviewed in the following section of this thesis. The results from these longitudinal studies, however, have provided confirmation that the life course theory's age-graded, long-term, and historical characteristics are essential features toward developing a better

understanding of patterns of substance use disorders across the lifespan. In particular, Hser and colleagues (Hser, 2007; Hser et al., 2007; Hser et al., 2006) have provided substantial contributions to the literature on the life course theory of patterns of substance use disorders. Hser et al.'s (2007) study demonstrates the use of the life course theory in relation to patterns of substance use disorders, which will be described in brief below.

Relying upon a number of longitudinal studies, Hser et al. (2007) frame the life course trajectory of drug use as involving transition and turning point events that include onset, acceleration, relapse, and cessation components. Each of these transitions or turning points alters the subsequent trajectory of an individual's alcohol use. The onset transition events of drug use, also referred to as initiation, were found to typically occur in adolescence, peaking in early adulthood with limited initiation occurring after age 25. Hser et al. (2007) found earlier age of onset was related to continued use of alcohol use problems in later life. Onset transition events are consistently related to risk factors (e.g., poverty, family history of alcohol use, low social attachment, life stressors, neighborhood disorganization and availability of drugs), and protective factors (e.g., supportive family environment, academic involvement, and self-esteem). Hser et al. (2007) also found that many of these risk and protective factors associated with onset transition events were also associated with subsequent acceleration transition events that trigger an escalation or increased frequency of use, including psychological characteristics and environment factors.

Furthermore, among those individuals who develop a substance use disorder into adulthood and recover (e.g., through an aging-out process or through substance use treatment), Hser et al. (2007) found that similar risk and protective factors associated with onset and acceleration transition events were also associated with relapse transition and turning point

events, including poverty, comorbid psychiatric disorders, and lack of family and social supports. However, due to the complexity of relapse transitions, as well as divergent definitions of relapse used across studies and across drug types, Hser et al. (2007) suggested that further research was needed to understand both relapse transition and relapse turning point events. For example, relapse transitions – or, possibly better thought of as turning points – have been found to occur for one-quarter of heroin addicts after periods of abstinence as long as 15 years, while relapse among alcoholics were found to have decreased substantially after 5 years of abstinence.

Next, cessation transition and turning point events, like relapse, require further research primarily due to the unknown duration required to satisfactorily conclude that an individual has permanently stopped substance use. According to the life course theory, an individual could be in addiction recovery for as long as 30 years yet experience a transition event late in life (e.g., social isolation following retirement, death of a spouse, or an empty nest) triggering a relapse turning point event which could substantially alter his or her substance use trajectory (Hser, Huang, & Anglin, 2007). Hser et al. (2007) provide support for this analysis with studies suggesting that heroin cessation is a slow process and may never occur for some older adults. In contrast to the threats of relapse, the life course theory also suggests that transition and turning point events may influence an individual's substance use trajectory toward cessation and recovery. For example, alienation and social disconnection, relationship problems, and health problems have been found to trigger turning point events sufficient to change an individual's substance use trajectory toward cessation either by independently making changes or seeking treatment.

Alternative theories

Two alternative theories explaining the antecedents of alcohol use disorders in older adults include the addiction career theory and the gateway hypothesis. Both of these competing theories of alcohol use disorders began in the early 1980s and possess similarities and differences with the life course theory.

Addiction career theory. Addiction career explanations of patterns of alcohol use disorders emerged in the 1980s, modeled from career dynamics theory in business and organizational management (Edwards, 1984; Hser, Anglin, Grella, Longshore, & Prendergast, 1997). An individual's addiction career is considered to follow a path similar to a person's work or employment career, featuring upward and downward movements across the lifespan. The addiction career perspective, while possessing some overlap with the life course theory, provides a different lens through which to view patterns of alcohol use disorders over the lifespan. The addiction career is typically composed of three components, (a) career stages, (b) change through career stages, and (c) career roles (Shaw, 2002). The career roles construct will be examined briefly below.

Addiction career roles include non-users, casual users, habitual users, and problematic users. These roles can be thought of as paralleling work-related career roles (e.g., entry-level, middle-management, and upper-management; Bedeian, Pizzolatto, Long, & Griffeth, 1991). Within this role component of the addiction career, non-users tend to be considered potential casual users, and casual users tend to be individuals who fluctuate between the roles of non-use and recreational or experiential use. Habitual users are considered to be individuals who regularly engage in alcohol use as a lifestyle or as a behavioral routine, but possess protective factors that enable continuous use without substantial personal, professional, or social

consequence. However, in the absence of protective factors, a habitual user may take on the problematic-user role in which a alcohol use disorder begins to encompass most aspects of an individual's life. Next, the problematic user tends to become dependent upon external groups and institutions, such as family, alcohol using social networks, and social welfare sources, in order to continue his or her alcohol use. Individuals in the problematic-user role tend to focus almost entirely on obtaining and using drugs, relinquishing the ability to function independently in normal life (Shaw, 2002).

Compared to the life course theory, addiction career theory offers a similar longitudinal view on alcohol use, but somewhat different explanation for the embedded patterns of use across the lifespan. The use of career roles may provide a useful addition to the life course theory by accounting for the role of a alcohol user within the context of transition and turning point events. The antecedents to longer-term alcohol use trajectories may be further explained by the interaction of the addiction career role component and the timings and sequences of specific transition and turning point events across time. Further discussion regarding integrating the addiction career role component with the life course theory will be provided in the final section, 1c.

The gateway hypothesis. The gateway perspective is another alternative theory to the life course theory that explains antecedents of alcohol use disorders in older adults. The gateway hypothesis emphasizes alcohol use onset more so than either the life course theory or the addiction career theory. The gateway view of alcohol use evolved from the "stepping stone theory" which originated in the 1950s. The gateway hypothesis subsequently emerged in the early 1980s due to the work of Kandel (1975). The hypothesis consists of two main principles: (a) an escalating sequence of stages in drug use exists, beginning with less harmful drugs such as

tobacco and alcohol, proceeding to marijuana, and then to cocaine, methamphetamines, heroin, and prescription drugs, and (b) an individual participating in a drug behavior is at risk for progressing to another, more harmful drug (Bell & Keane, 2014; Kandel, 2002).

The second principle of the gateway hypothesis may offer further explanation of antecedents of alcohol use disorders among older adults not accounted for by the life course theory. This principle suggests that individuals are less likely to use drugs (e.g., cocaine, methamphetamines, and heroin) after beginning alcohol use without having first experienced onset or initiation through the use of the early-sequence gateway drugs (e.g., tobacco, alcohol, and marijuana). In other words, across the lifespan, the risk of an individual using a drug later in the above sequence as his or her onset drug is low. For the purposes of constructing a conceptual model in section 1c below, this principle will be labeled as the "gateway risk" construct.

Stated earlier, from a life course theory, transition and turning point events may change an individual's alcohol use trajectory even later in life (e.g., social isolation, retirement). Moreover research suggests that older adults are at increased risk to use prescription drugs for non-medical purposes (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011). In conjunction, studies also suggest that birth cohorts who possess high rates of alcohol use in adolescence have high rates as they age (Colliver, Compton, Gfroerer, & Condon, 2006). In particular, the baby-boomer cohort possesses this characteristic. Therefore, a "gateway risk" construct, which suggests that individuals who use gateway drugs are at higher risk to use "hard" drugs (i.e., non-medical prescription drugs), may offer further explanations not accounted for by the life course theory.

In conclusion, the life course theory regarding patterns of alcohol use across the lifespan and particularly the outcomes related to older adults provides a broad, realistic view of long-term

alcohol use. In addition, the life course theory highlights the complexity of the task of conducting research toward informing alcohol use treatment. Longitudinal outcomes are variable and difficult to capture within a static research framework, though a certain degree of understanding can be arrived at by extracting cross-sectional data at points in time. However, in order to more fully understand the antecedents of alcohol use disorders among older adults, new research designs may be warranted which view alcohol use disorders from a cyclical, or process-oriented, perspective rather than viewing relapse and recovery as static constructs.

Alcohol treatment barriers and life course-informed treatments for older-adult baby boomers

As outlined earlier, from a life course theory one may expect that unique treatment barriers exist among older adults who possess a history of a alcohol use disorder. From a theoretical life course theory, many adults who struggle with an ongoing and chronic alcohol use disorder in later life have likely received treatment previously. That is, a past transition event (e.g., social isolation due to an empty nest, divorce, death of a spouse, or retirement/layoffs) may have triggered a turning point such as reception of alcohol use treatment. In this example, an individual may have had positive or negative experiences in treatment, but in later age has relapsed to alcohol use. Likewise, an older adult may have experienced transition and turning point events that resulted in a long-term trajectory of health decline over the years. To summarize, the life course theory suggests that by virtue of the passage of time and accumulation of experiences (i.e., changes in trajectories), an older adult alcohol user may possess a distinctly different view of alcohol use treatment compared to his or her younger counterparts. As a result, alcohol use treatment of older adults, according to the life course theory, may likely possess idiosyncratic characteristics not found or not as visible in younger groups.

Confirming the life course theory, research suggests that a number of unique barriers to treatment exist for older adults with a history of alcohol use disorders. The primary barriers include: (a) misdiagnosis; mistaking alcohol use as stereotypical signs of aging such as memory loss, confusion, depression, hostility, an unsteady gait, and change in personal appearance, (b) underdiagnosis resulting from denial or discomfort related to discussing alcohol use in the context of being a problem or disorder (i.e., lack of problem recognition), (c) lack of family and social support, and (d) lack of financial resources (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011; Sorocco & Ferrell, 2006). In addition, barriers to treatment for older adults may also be triage-related. That is, most older adults' contact with healthcare systems occurs mainly through their primary care provider (PCP) or emergency room visits (Moos, Brennan, Schutte, & Moos, 2010; Petrovic, van der Cammen, & Onder, 2012). Physical and mental health problems that are ongoing and serious may become the PCP's main focus of care for the health-deteriorating older adult, whereas alcohol use-related issues are shifted to "backburner" status (Memmott, 2003).

The "invisibility" of alcohol use disorders among older adults is further complicated among those who possess multiple chronic conditions (Ryan et al., 2013). Multiple chronic conditions are defined as two or more concurrent conditions that have compounding affect on an individual's health and quality of life, requiring complex healthcare management (Dy, Pfoh, Salive, & Boyd, 2013). Research suggests that up to 30% of older adults who possess multiple chronic conditions also drink alcohol regularly. However, as the number of chronic conditions increases alcohol use generally decreases due to adverse interactions between prescription medications and alcohol consumption (Petrovic et al., 2012). In contrast, studies suggest that non-medical prescription drug misuse is positively associated with an increase in multiple chronic conditions (Moos et al., 2010). While some findings indicate that early-onset, or lifetime

drinkers, are more likely to replace alcohol use with prescription drug use compared to their late-onset counterparts, current evidence suggests that multiple chronic health conditions do not necessarily predict a reduction in alcohol use disorders among older adults. Rather the evidence suggests that the type of drug used changes (Wu & Blazer, 2011).

Life course-informed alcohol treatments

In the context of current research findings, the life course theory is further supported as a valuable addition to understanding both the antecedents and subsequent treatment of older adults with alcohol use disorders. In particular, the value inherent in the use of the life course theory may begin with the non-judgmental paradigm within which the perspective frames alcohol use disorders. In other words, the life course theory - particularly the constructs of transitions and turning point events and an additional emphasis on social capital - suggests that throughout an individual's lifespan health-promoting change is always possible.

The life course theory has the potential to guide adaptations to established treatment modalities, such as motivational interviewing (MI) and cognitive-behavioral therapy (CBT), for use with older-adult alcohol users (Cooper, 2012). Moreover, the nonjudgmental nature of the life course theory may help the alcohol use counselor, the primary care physician, and other medical professionals to convey both a nonjudgmental, empathic attitude toward the older adult and provide a unique psychoeducational approach toward reducing treatment barriers found among this population. These ideas will be developed further below.

Motivational interviewing and CBT have both shown potential effectiveness in the treatment of older adults with alcohol use disorders. Contained within both these treatment approaches is an emphasis upon a nonjudgmental, empathic clinical attitude toward the older-adult alcohol user. Moreover, this type of attitude is considered a common mechanism through

which a treatment professional can both engage older adults in treatment and encourage successful participation behaviors throughout treatment (Center for Alcohol Use Treatment [CSAT], 2005). In addition, a recent systematic review of treatment-service effectiveness among older adults with alcohol use problems found that motivational enhancement-based treatments as well as treatments that combined aspects of cognitive and behavior therapies possessed the strongest evidence for effectiveness as well as implementation feasibility (Mowbray & Quinn, 2016). A brief review of the hypothesized mechanisms of change specific to MI and CBT are provided below.

Motivational interviewing with older adults. Within a nonjudgmental, empathic context, MI seeks to develop discrepancy between an older adult's alcohol use behaviors and his or her perception of these behaviors as a potential problem. Resolving the older adult's ambivalence that may emerge in reaction to his or her perceptions of this discrepancy is another primary mechanism thought to encourage the older adult toward increased change talk (i.e., verbal statements related to alcohol use behavior change). Throughout the brief course of MI treatment – usually two to six sessions with older adults – the MI treatment professional also seeks to support self-efficacy and avoid argumentation by the use of affirmations and "rolling with resistance" (Moyers, Miller, & Hendrickson, 2005; Cummings, Cooper, & Cassie, 2009). Motivational interviewing has been found to be an effective brief stand-alone treatment for older adults, as well as an enhancement to CBT when provided as an initial session (Cooper, 2012; Cummings et al., 2009).

Cognitive-behavioral therapy with older adults. Similar to MI, CBT places substantial emphasis on a nonjudgmental, empathic attitude when working with older adults with alcohol use disorders. In addition, the primary mechanisms of change hypothesized to be salient in older

adult treatment include (a) identifying and challenging thought patterns specific to alcohol use of older adults, (b) assessing and enhancing social support networks, (c) identifying and increasing activities that provide joy and accomplishment, and (d) developing a relapse prevention plan. Studies suggesting CBT's effectiveness indicate that thought patterns of older-adult alcohol users are particularly important to examine. These thought patterns include a sense of having little control over his or her life, feeling no longer needed, and perceiving that intimate relationships are no longer possible. A thought record is utilized to assist the older-adult alcohol user to maintain a weekly record of negative thoughts, which is reviewed at the beginning of each session. In addition, enhancement of social support networks is emphasized by encouraging social skills practice in and outside the session. Cognitive-behavioral treatment of older-adult alcohol users recognizes that a alcohol use disorder may function as a coping mechanism in reaction to negative life situations. Older adults are encouraged to engage in pleasurable activities not associated with alcohol use in an effort to development replacement behaviors. During the final sessions of CBT – which has been found to be effective with older adults in doses of 9 to16 sessions – the treatment focuses on possible barriers to continued reduction or abstinence. The older-adult clients are encouraged to identify both psychological and environmental situations that may increase the risk of relapse, and develop specific strategies for addressing issues when they arise (Cooper, 2012; CSAT, 2005).

Alcohol use and health among older adults

Despite a dearth of studies that have examined the concurrent effects of alcohol use disorder treatment of older adults and the influence on health, the life course conceptual model suggests that MI and CBT individually, or as a combination treatment (i.e., MI booster sessions in conjunction with CBT treatment), may be strong candidates for a comprehensive treatment

package for older adults. However, barriers to older adults receiving treatment may require that a brief pre-treatment protocol be developed in order to encourage or enhance the motivation of the older-adult alcohol user to commit to more formal MI/CBT treatment programs. In short, research suggests that the primary entry point of contact for older adults with alcohol use disorders, as well as older adults in general, may be their primary care doctor concerning health-related problems. Older adults have been found reluctant toward seeking specialized treatment, such as with mental health or alcohol use disorder specialists (Bartels, Blow, Brockmann, & Van Citters, 2005; Harman, Veazie, & Lyness, 2006). However, a few studies suggest that, when properly prepared, an older adult's primary care doctor can provide a brief motivational enhancement intervention found to reduce alcohol use and encourage treatment entry among low-level users (Fleming, Manwell, Barry, Adams, & Stauffacher, 1999; Moore et al., 2011).

Furthermore, the life course theory may provide the primary care doctor, or nurse, guidance in understanding and briefly engaging older adults with alcohol use disorders during a typical healthcare appointment. In particular, Rollnick, Miller, & Butler (2008) suggest that asking, listening, and informing are three core skills that healthcare professionals can develop in order to engage patients. In a context of a fast-paced and time-limited medical setting, these brief "check-in's", when combined with sufficient training, and reliable screening tools (e.g., Alcohol Use Disorders Identification Test [AUDIT]; Oslin et al., 2014) can be effective in engaging the older adult in subsequent specialized care (Rollnick, Miller, & Butler, 2008). In addition to asking about and listening to an older adult regarding a potential alcohol use disorder, informing or psychoeducation is suggested to be a third key component in fostering an environment that encourages behavior change. This type of feedback is more likely to be

effective with a client or patient when provided in a nonjudgmental, empathic context (Apodaca & Longabaugh, 2009).

Proposed Dissertation Structure

This dissertation will address theory, research, and practice among baby boomers possessing an alcohol-use disorder across the life course. The framework of the dissertation follows the three-article style, and these three articles make up chapters 2, 3, and 4, respectively. Specifically, the three articles are: (1) a scoping review of the literature between 1990 and 2015 that focuses on explanatory factors related to alcohol-use disorders and treatment outcomes among baby-boomers, (2) an exploratory study examining the factors most predictive (i.e., both statistically and clinically significant) of alcohol-use disorders among the baby-boomer cohort at two points in time (i.e., 2010/2009 and 1998/1997), with the objective of providing empirical support to the life-course theory and discovering life course-related factors that predict alcohol-use disorders among baby-boomers , and (3) a confirmatory study that extends the findings of article #2 with respect to changes across time in factors that predict lack of problem recognition among baby boomers with alcohol-use disorders. Regarding article #3, problem recognition is typically thought to influence entry into treatment and the likelihood of successful treatment outcomes (Cohen, Feinn, Arias, & Kranzler, 2007; Moyers, Miller, & Hendrickson, 2005; Prochaska & Norcross, 2001). Moreover, the primary question contained in this latter article will focus on whether a baby boomer, possessing a diagnosable alcohol-use disorder, recognizes that he or she needs treatment; and, over time, what factors obtained in article #2 predict this phenomenon?

Conceptual framework

A brief summary describing chapters 2, 3, and 4 (i.e., article's 1, 2, and 3, respectively) is provided below. In addition, a conceptual model for each chapter is provided at the end of the current chapter in order to illustrate the main points of each chapter graphically.

Chapter 2: A scoping review of treatments for baby-boomers with alcohol-use disorders

Research suggests that the baby-boomer cohort, defined by the U.S. Census Bureau as those individuals born between 1946 and 1964, may possess increased rates of late-life alcohol use compared to previous older-adult cohorts. Future effective treatments are needed that are tailored to baby boomers as they enter older adulthood. Social science, medical, and addiction-related research databases were searched between 1990 and September 2015for publications that reported treatment outcomes for the baby-boomer age-cohort. 1,129 potential publications were found. An examination of these candidates was performed, yielding 69 relevant publications. Further study criteria were utilized, including design rigor, representative samples, and outcome-related statistics reported, resulting in 19 final publications for use in this study. Using guidelines described by the *U.S. Preventive Services Task Force*, each publication was given a quality rating of "good," "fair," or "poor," depending on its validity. Of the 19 studies, 5 were rated as "good," 11 as "fair," and 3 as "poor." In addition, the publications were grouped by intervention category. The main finding was that no experimental research exists that examines the effects of alcohol-use interventions among exclusive samples of baby boomers. Findings from studies that possessed the best representative samples and the highest methodological rigor suggested that established cognitive-behavior and motivational-interviewing based treatments for alcohol-use disorders, provided in outpatient settings or as mail-based guided protocols, are potentially effective in reducing drinking among baby boomers. Further research is needed,

specifically studying alcohol-use treatment among exclusive samples of baby boomers. Baby boomers struggling with alcohol-use disorders may be most responsive to structured, self-guided treatments.

Chapter 3: Factors that impact alcohol use disorders among baby boomers across the life course

Research suggests changes in alcohol usage patterns among baby boomers compared to previous older-adult counterparts. Baby boomers have been found to possess higher rates of binge drinking, lower reported rates of alcohol abstention, and higher rates of alcohol-use disorders compared to their older counterparts. The evidence suggests that as baby boomers enter older adulthood, unique alcohol-use patterns may become apparent. Data is from two time periods, 2010/2009 and 1998/1997, of the National Survey of Drug and Health (NSDUH). 112,547 respondents were assessed for the presence of an alcohol-use disorder in 2010/2009, and 50,005 were assessed for the presence of an alcohol-use disorder in 1998/1997. Of these respondents, subpopulation domains of 6,213 baby boomers in 2010/2009 and 5,880 baby boomers in 1998/1997 were obtained. In addition, to the alcohol-use disorder variable, 26 theoretical/empirical-related explanatory variables were selected as candidates for a logistic regression model predicting alcohol-use disorders. Variable selection procedures were performed, resulting in two predictive models for alcohol-use disorders among baby boomers, one for 2010/2009 and one for 1998/1997. Thirteen risk and protective factors were found to predict alcohol-use disorders at each time period. The primary finding was that both risk and protective factors, which had substantially influenced the development of alcohol-use disorders among middle-aged baby boomers, were replaced by different, but mostly similar, factors as the baby-boomer cohort approached older adulthood. Despite changes in particular factors, this

study found that the majority of factors at both time periods possessed an underlying impulsivity characteristic that appeared to remain stable over time. In addition, protective factors were found to become statistically significant as baby boomers aged. The findings from this study suggest that as baby boomers with alcohol-use disorders have aged, impulsive characteristics among the factors predicting alcohol-use disorders have remained stable. Moreover, protective factors have become more salient in their impact upon drinking problems. These findings suggest that a primary treatment choice for baby boomers possessing alcohol-use disorders is a modality that emphasizes impulse control as well as strengthening social bonds.

Chapter 4: Factors related to lack of alcohol problem recognition among baby boomers across the life course

As baby boomers continue to enter older adulthood in the coming decades, research suggests that this cohort is expected to exhibit changes in alcohol usage and treatment need patterns compared to previous older-adult cohorts. The literature suggests that unmet alcohol treatment need may be substantially due to a lack of problem recognition among baby boomers possessing an alcohol-use disorder. This study builds upon and extends the findings in Chapter 3. Data is from two time periods, 2010/2009 and 1998/1997, of the NSDUH. 112,547 respondents were assessed for the presence of an alcohol-use disorder and recognition of possessing an alcohol problem in 2010/2009, and 50,005 were assessed for the presence of an alcohol-use disorder and recognition of possessing an alcohol problem in 1998/1997. Of these respondents, subpopulation domains of 6,213 baby boomers in 2010/2009 and 5,880 baby boomers in 1998/1997 were obtained. Unique sets of explanatory variables for each time period, found in earlier research, were used to examine factors that predicted baby boomers' lack of problem recognition in each time period. The explanatory variables were obtained by drawing

from a life course theory framework of patterns of alcohol use. At both time periods, 2010/2009 and 1998/1997, logistic regression analyses indicated that baby boomers who received alcohol treatment in the past year, were charged with a past year DUI, and received mental health treatment in the past year were more likely to indicate a lack of problem recognition when a drinking problem existed. Across time, these likelihoods increased. In addition, factors possessing an underlying characteristic of impulsivity were found to increase over time the likelihood of baby boomers indicating a lack of alcohol problem recognition. This study's findings suggest that a primary treatment choice for baby boomers with alcohol-use disorders is a modality that encourages the development of intrapersonal or intrinsic motivators for change, in contrast to treatments that focus solely on external consequences. In addition, a treatment that focuses on encouraging impulse control is indicated by the findings.

Conclusion

In summary, the results reported in this dissertation compose a logical whole. Moreover, when combined, these results suggest substantial implications for alcohol use research and practice related to baby boomers. Overall, the findings suggest that baby boomers are an overlooked population of aging adults with regard to research and research-informed alcohol-use treatments. The combined findings reported in this dissertation provide support for future research as well as clinical practice.

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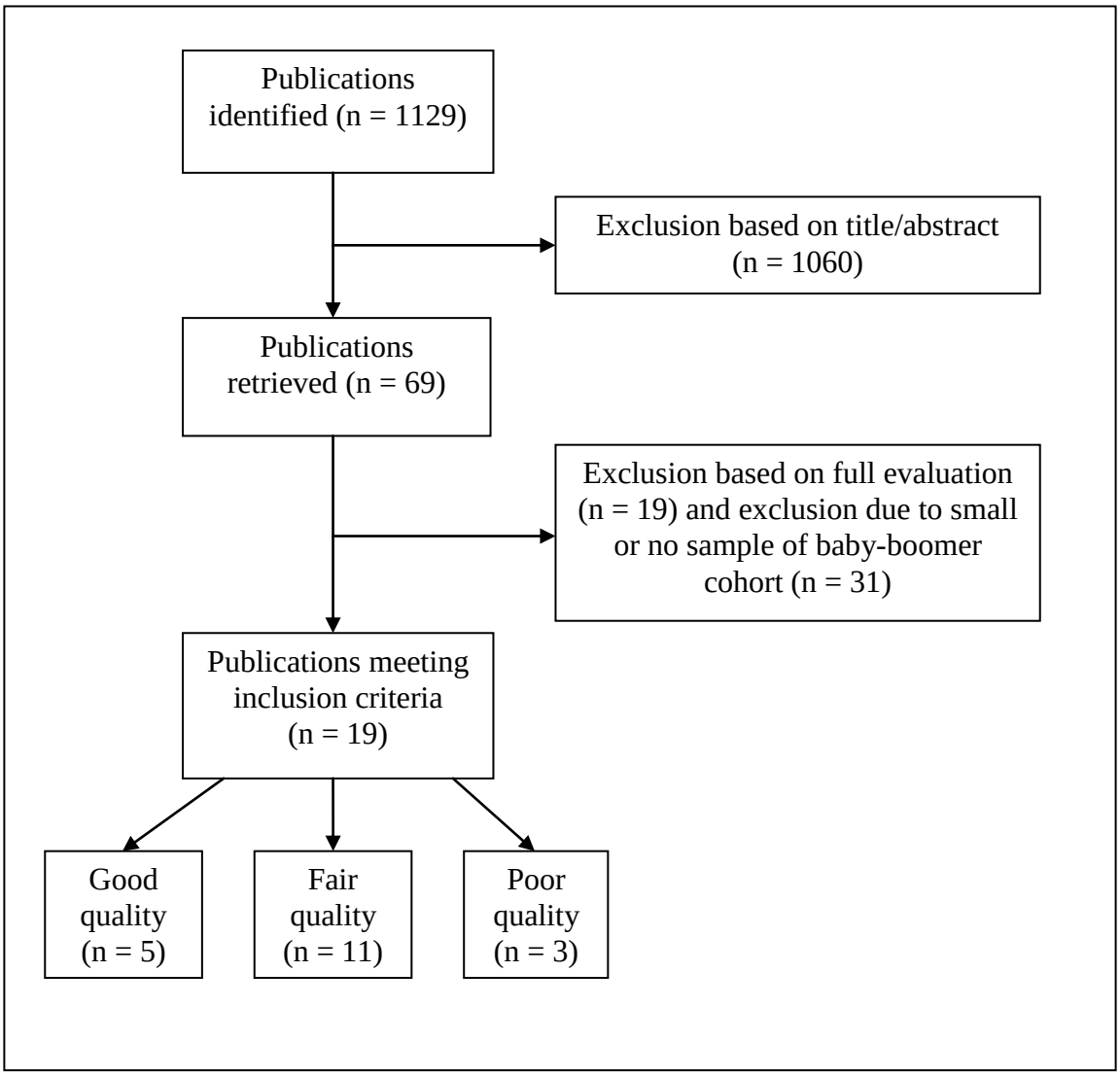

Figure 1.1. Flow chart displaying procedures for scoping review of treatments for baby boomers with alcohol-use disorders.

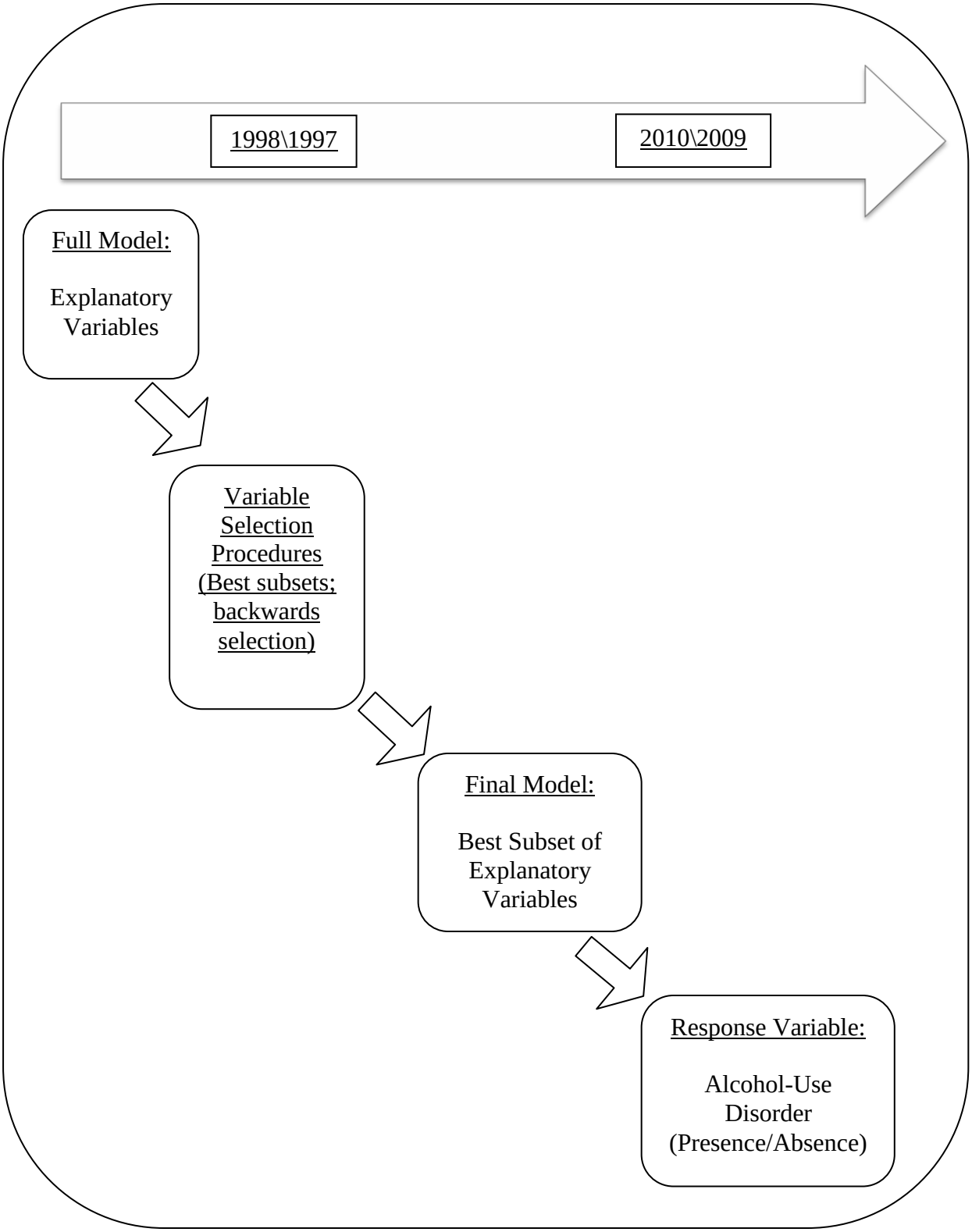

Figure 1.2. Conceptual model of variable selection process for "best" models predicting alcohol-use disorders among baby boomers in 2010/2009 and 1998/1997

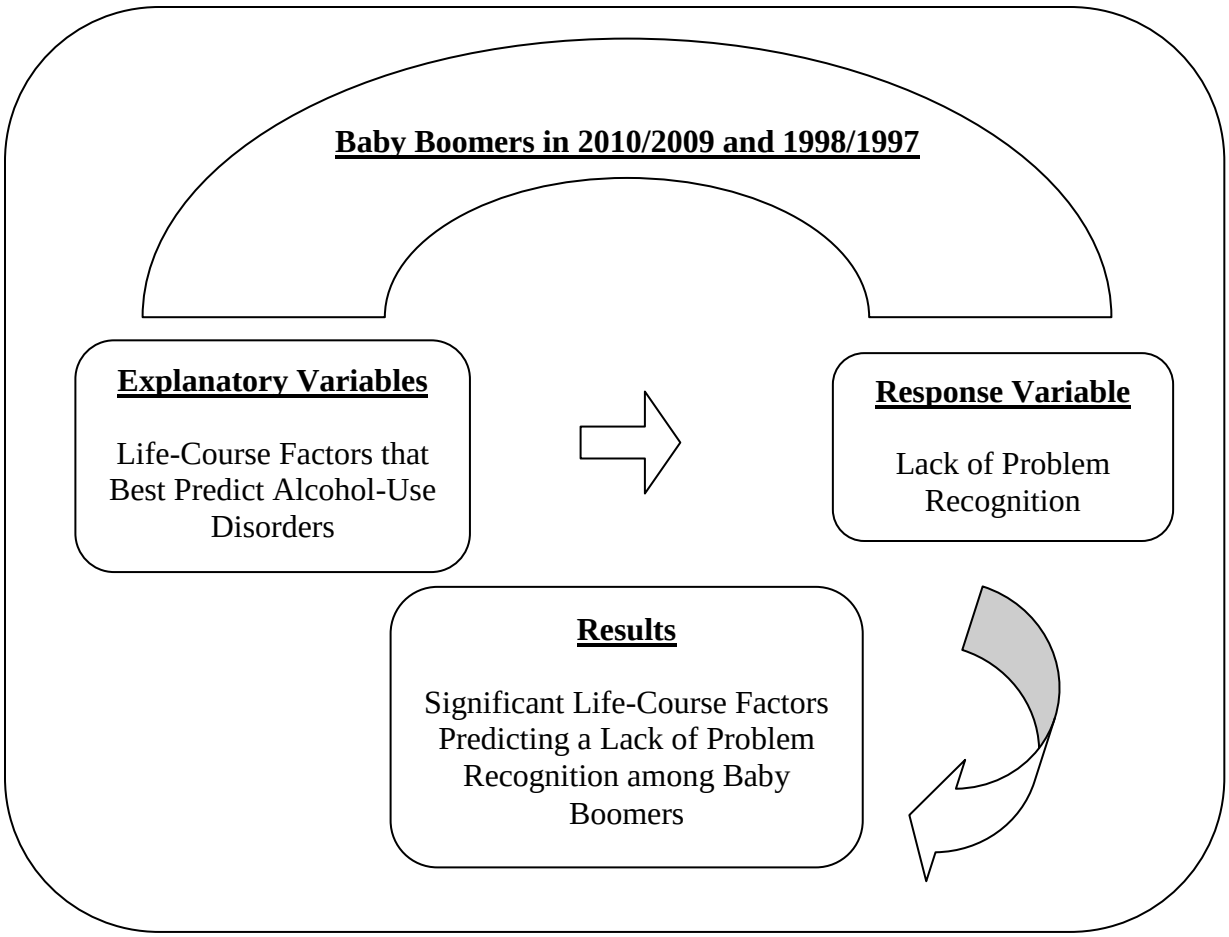

Figure 1.3. Conceptual model for prediction of lack of alcohol problem recognition among baby boomers.

CHAPTER 2

TREATMENTS FOR BABY-BOOMERS WITH ALCOHOL-USE DISORDERS

During the past fifteen years, researchers, practitioners, and policy-makers in the United States have become aware of changes in patterns of alcohol use among the baby-boomer cohort, particularly as the baby boomers continue to age in the coming decades of the 21st century. Research suggests that the baby-boomer cohort, defined by the U.S. Census Bureau as those individuals born between 1946 and 1964, may possess increased rates of late-life alcohol use compared to previous older-adult cohorts (Colby & Ortman, 2014; Gfroerer, Penne, Pemberton, & Folsom, 2003). Moreover, the number of adults age 60 or older requiring substance-use treatment in general is projected to increase from 688,000 in 2000 to 2.3 million in 2020, an increase of 134% or about 3 times the treatment need from 2000 (Gfroerer et al., 2003). This trend is expected to continue with the last of the baby-boomers reaching age 60 in 2024 and age 65 in 2029.

In 2010, the year prior to the first baby-boomers turning 65, the number of U.S. adults 65 years or older was 40.2 million (U.S Census Bureau, 2011). In contrast, when the last of the baby boomers turns 65 in 2029 the U.S. Census Bureau (2012) projects that approximately 71.4 million adults will be 65 years or older. During this period (i.e., 2011-2029), the population of older adults in the U.S. age 65 or older will increase approximately 78%, while the total U.S. population will increase by approximately 17%, and the population of individuals under 65 years of age will increase by only 6%. Likewise, research suggests that, prior to the baby boomers entering older adulthood, on average approximately 2.5 million older adults in the U.S.

possessed an alcohol-use disorder. However, by 2020 this number is expected to double to 5 million, with alcohol treatment need for older adults mirroring this trend (Duncan, Nicholson, White, Bradley, & Bonaguro, 2010). In short, the baby-boomer cohort is expected to impact U.S. healthcare substantially over the next 35 to 40 years.

Research suggests that as adults age, their prevalence and patterns of alcohol use tend to be idiosyncratic to (a) regional and cultural variations, (b) life-time drinking behaviors such as the age at which a person began drinking, and (c) risk factors and life events which may have impacted the onset and recurring alcohol-use behaviors of a given individual (St John, Snow, & Tyas, 2010). Older adults are typically found to abuse alcohol and other legal drugs, such as prescription and non-prescription medications, more often than illicit drugs such as marijuana, cocaine, and heroin. As a result, older adults' concurrent use of alcohol and prescription medication has become a growing concern as studies suggest that adverse drug reactions among older adults are related to increased hospitalization admission and mortality (Petrovic, van der Cammen, & Onder, 2012).

Until recently alcohol use was thought to decline with age; a higher rate of "aging out" of alcohol use was consistently found among older adults (Memmott, 2003; Simoni-Wastila & Yang, 2006). For example, older adults classified as "young-old" (i.e., 65-74 years) have been found to use alcohol more frequently than those classified as "oldest-old" (i.e., 85+ years). However, research now suggests that this may not be the case among baby boomers. Recent findings suggest a change in alcohol usage patterns among the baby-boomer cohort compared to their older cross-sectional counterparts (Duncan et al., 2010). For example, from data obtained between 2008 and 2012, baby boomers were found to possess lower reported rates of lifetime alcohol abstention, higher rates of binge and heavy alcohol use, and higher rates of alcohol-use

disorders compared to their older counterparts (i.e., possessing a diagnosis of alcohol dependence and/or alcohol abuse; Choi, DiNitto, & Marti, 2015). These findings suggest that as the baby-boomer generation enters into older adulthood in the coming decades, changes in alcohol-use patterns may emerge (Gfroerer et al., 2003).

Studies suggest that baby boomers, similar to previous cohorts of aging adults, may be prone to experience signficant barriers to alcohol-use disorder treatment as the they age in the coming decades (Babatunde, Outlaw, Forbes, & Gay, 2014; Choi et al., 2014). These barriers may include: (a) misdiagnosis; mistaking substance use as stereotypical signs of aging such as memory loss, confusion, depression, hostility, an unsteady gait, and change in personal appearance, (b) underdiagnosis resulting from denial or discomfort related to discussing substance use in the context of being a problem or disorder, (c) lack of family and social support, and (d) lack of financial resources (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011; Moos, Brennan, Schutte, & Moos, 2010; Petrovic, van der Cammen, & Onder, 2012; Sorocco & Ferrell, 2006).

In summary, with current evidence suggesting an increase in alcohol-use disorders among this unprecedentedly large, aging cohort, the importance of developing tailored treatment approaches is expected to be a growing concern within the addictions treatment and social work professions (Briggs et al., 2011; Choi et al., 2014; Choi et al., 2015; Mowbray & Quinn, 2016).

Baby boomer-related research

Surprisingly, the literature suggests that among alcohol-use intervention research, the baby-boomer cohort, as an age group-specific focus of study, has been largely overlooked. The majority of alcohol treatment research reports findings in which no directly accessible information is provided that allows for inference with respect to treatment recommendations for

baby boomers in particular. For example, in their attempt to study patterns of substance abuse among baby boomers using a secondary data source, Duncan et al. (2010) commented that they were unable to differentiate between the "aging adult," the "old," the "old old," and the "oldest old." Likewise, Mowbray and Quinn's (2016) scoping review of treatments for older adults found that older-adult age categories created difficulty in differentiating between sub-groups older adults by age.

Similarly, in the preparation of this scoping review, no alcohol-use treatment study was found that that reported findings exclusive to the baby-boomer age cohort. Despite this obstacle, statistical tools were used in this review in order to obtain an approximate percentage of baby boomers in the studies reviewed. These tools will be described in the Methods section.

Purpose of this study

The purpose of this review is to summarize and categorize the existing evidence pertaining to effective treatment interventions for baby boomers with alcohol-related problems. This review uses explicit, validated criteria to identify interventions that are effective, while also identifying areas in need for further research toward the effective treatment for baby boomers struggling with alcohol-use disorders.

A scoping review provides an effective means to rapidly map key concepts of a research area while offering an assessment of available evidence to relevant policy makers, practitioners, and clients. This type of review is different than a systematic review in that it offers a broad survey of a research field and is inclusive of research designs other than randomized control trials (RCT). Therefore, this type of review provides a unique strategy for identifying gaps in existing knowledge of an area of study (Landa et al., 2011; Mays, Roberts, & Popay, 2001).

Methods

Data sources

Databases including PsychINFO, Education Research Complete, Pubmed/MEDLINE, Social Work Abstracts, SocINDEX, Sociological Collection, and Social Service Abstracts were searched for 25 years' worth of publications from 1990 through September 2015. The following search terms and their combinations were used in multiple searches: alcohol abuse treatment outcomes and baby boomers, alcohol abuse treatment and age, alcohol abuse treatment and randomized control trial, alcohol dependence treatment outcomes and older adults, alcohol abuse prevention baby boomers, alcohol abuse intervention and older adults, and alcohol dependence intervention. In addition, bibliographies of publications possessing relevant titles and/or abstracts were reviewed in order to identify additional publications not located through the initial searches. The initial search process resulted in over 7,000 publications. An age-related search filter was then applied that selected only studies which included broad age ranges that loosely overlapped with the baby boomers age at the time of publication. This filter resulted in 1,129 potential candidates. A subsequent examination of publication titles and abstracts from this initial inclusion yielded 69 relevant publications.

Study selection

These 69 publications were then each examined for inclusion based on the following non-mutually exclusive criteria: (a) the research study must have reported the time period during which the study was conducted (i.e., as opposed to the publication date), (b) it must have reported the age of participants, either by age groups and/or by mean and standard deviation statistics, (c) a sample size greater than or equal to 40 participants must have been utilized (i.e., in order to meet the criteria of an asymptotically normal distribution), (d) at the time the study

was conducted, at least 68% of participants fell within the baby-boomer age range (i.e., under the assumption of asymptotic normality, ±1 standard deviation from the mean captures approximately 68% of the participants [Wackerly, Mendenhall, & Scheaffer, 2007]), (d) the study must have quantitative results, (e) it must measured outcomes associated with alcohol use (e.g., as opposed to quality of life measures), (f) it must be published in a peer-reviewed journal, (g) it must examine alcohol-use disorders (i.e., alcohol abuse or dependence), (h) it must be in English. Studies applying RCT's were initially preferred. However, of the 69 publications, only 7 presented intervention outcomes using a true RCT design. In addition, of the 69 publications only 10 met the criterion of possessing a sample composed of at least 68% baby boomers. Thus, the scope was expanded to include studies whose samples composed 50% or more baby boomers. In addition, studies using random control designs, comparative random control designs, longitudinal outcome designs with no control group, pretest-posttest designs with no control group, cross-sectional designs with no control group, and within group age-comparison designs with no control group. As a result, 19 publications met study selection criteria as outlined above and were included in the review. The search results and a QUORUM flowchart are presented in Figure 1.

Critical appraisal

In order to ascertain useful patterns in the 19 publications that met study selection criteria, and to prioritize findings according to methodological rigor, the publications were assessed using guidelines described by the *U.S. Preventive Services Task Force* (Harris et al., 2001). These guidelines were used to assess the evidence presented in each of the 19 publications with regard to internal and external validity. Internal validity examines study design with respect to clarity of intervention, random assignment, control groups, longitudinal follow-

up, and the validity and reliability of the outcome measurement. External validity examines generalizability of study participants, methods, study setting, and health care providers.

Using the guidelines summarized above, each publication was given a quality rating of "good," "fair," or "poor," depending on its validity. In particular, the publications in this review were appraised as good if they included (a) race/ethnicity, gender, and socioeconomic status consistent with known demographic characteristics of alcohol users (i.e., a representative sample; Choi et al., 2015; Hasin, Stinson, Ogburn, & Grant, 2007); (b) a clearly defined intervention; (c) inclusion of a comparison group (i.e., a randomly assigned control group); (d) low study attrition, defined as less than 50%; (e) valid and reliable outcome measures; and (f) an outcome directly associated with alcohol use. Publications in this review were appraised as fair if one or more of the previous 6 criteria were not met and/or the sample included less than 60% baby boomers. Publications were appraised as poor if (a) control and intervention groups could not be kept separate through the duration of the study, (b) the reliability and validity of outcome measures were unknown or poor, (c) important confounders were not controlled for in the study design, (d) attrition was below 50% at the study conclusion, and (e) the sample size was less than 50 per experimental or control group.

Results

Among the publications included in the final analysis (N = 19), the primary outcome measures were consumption related, including quantity and frequency of alcohol use as well as time abstinent. Fifteen of the 19 studies were conducted in the United States. Of the four studies conducted outside the U.S., two were conducted in Australia, one in Germany, and one in Sweden. Both Australian studies compared cognitive-behavior therapy (CBT) plus medication to CBT alone (Feeney, Young, Connor, Tucker, & McPherson, 2001; Feeney, Young, Connor,

Tucker, & McPherson, 2002). These studies were rated as poor due to a lack of randomization of subjects to the experimental and comparison groups. The German study that was included utilized an RCT design to examine the effectiveness of a motivational-enhancement intervention compared to treatment-as-usual (TAU) among an inpatient sample of alcohol-abusing patients (Freyer-Adam et al., 2008). The Swedish study that was included utilized an RCT design in a workplace setting comparing the effectiveness of nurse practitioner alcohol-related feedback compared to a self-monitoring control among employees screened for risky alcohol consumption (Hermansson, Helander, Brandt, Huss, & Rönnberg, 2010). Both the German and Swedish studies were rated as *fair* due to not possessing a representative sample.

Of the $N = 19$ publications reviewed, 5 were rated as *good*, 11 were rated as *fair*, and 3 were rated as *poor*. The distribution of ratings and detailed information on each study, including design, sample description, and outcomes, is provided in Table 1. The publications were divided into four major interpretive categories. These categories were based upon the type of intervention provided, (a) clinic-based, established psychosocial interventions, (b) mail-based, established psychosocial interventions, (c) primary care physician (PCP) discussion and feedback related to alcohol-use, and (d) day treatment/contingency management interventions. The established interventions provided in categories (a) and (b) consisted of cognitive and behavior-based interventions and motivational enhancement-based interventions.

Clinic-based psychosocial interventions

Studies reported in publications that were included in the clinic-based psychosocial interventions category (n = 9) were primarily conducted in outpatient settings, with two inpatient-based studies. The cognitive and behavior-based interventions that were utilized in some studies in this category, in general, were based upon alcohol addiction treatment models

that emphasize coping skills and relapse prevention (e.g., Marlatt, & Gordon, 1985). The brief motivational-enhancement interventions that were utilized in some studies in this category were based in general on principles which emphasize change talk, movement through the stages-of-change, and developing a plan of action (Miller & Rollnick, 2002). Both of these psychosocial interventions are established alcohol-use disorder treatments, each possessing considerable evidence bases (e.g., Magill & Ray, 2009; Moyer, Finney, Swearingen, & Vergun, 2002).

Of the publications included in this category, two were rated as *good*. Both of these studies consisted of outcome-based experimental designs with over 60% baby boomers in the samples. One study (Anton et al., 2006) reported significant improvement in heavy drinking days among alcohol dependent subjects in an outpatient setting who received combined cognitive behavior-based therapy plus pharmacotherapy management compared to subjects receiving only pharmacotherapy management. In contrast, the other study receiving a *good* rating in this category compared the effect of one session of motivation interviewing (MI) to TAU among primarily alcohol-dependent subjects in an inpatient hospital setting. At both 3-months and 12-month follow-ups no difference between treatment conditions was found (Saitz et al., 2007).

Five publications in the clinic-based psychosocial interventions category were rated as *fair*. Three of these studies did not possess a sufficient control group in the study design, but possessed samples largely representative of the baby-boomer cohort. The three studies compared CBT-based therapies to (a) a motivational enhancement therapy condition; (b) a CBT-based treatment plus intensive relapse prevention condition; and (c) a relationship-based or occupational therapy treatment condition. Of these three studies, respectively, the first found CBT plus pharmacotherapy significantly reduced heavy drinking days compared to a motivational-enhancement plus pharmacotherapy condition (Anton et al., 2005); the second

found no difference between CBT versus CBT plus relapse prevention, subjects in both conditions reduced their drinking (Breslin, Sobell, Sobell, Sdao-Jarvie, & Sagorsky, 1996); and the third study, an age-group comparison design, found that the age group predominantly representing baby boomers significantly reduced alcohol-use after receiving either CBT-based or relationship-based therapies, but not after receiving occupational therapy (Rice, Longabaugh, Beattie, & Noel, 1993). The other two studies rated as *fair* in this category were both well-designed RCT's, but did not meet the representative sample criterion. Both of these studies compared an MI condition to either TAU or a 12-step treatment. The former study found no difference between MI and TAU in an inpatient hospital setting (Freyer-Adam et al., 2008), while the latter study found that subjects who received an MI plus psychoeducation treatment reduced heavy drinking days significantly more so than subjects who received 12-step treatment (Oslin et al., 2014).

Two publications were rated as *poor* in the clinic-based psychosocial interventions category. Both of these studies were conducted in Australia and met the representative samples criterion, but neither study used a randomized design. Both studies found that a CBT plus pharmacotherapy condition significantly reduced post-baseline drinking among representative samples of baby boomers in outpatient settings (Feeney et al., 2001; 2002).

Mail-based psychosocial interventions

Three publications were included in the mail-based psychosocial interventions category. Two of these three studies were rated as *good*. One study found that a mail-based guided CBT treatment condition significantly reduced daily drinking compared to a mail-based self-monitoring condition among alcohol abusing/dependent samples of predominantly baby boomers (Kavanagh, Sitharthan, Spilsbury, & Vignaendra, 1999). The latter study rated *good* in this

category found that a predominantly baby-boomer sample significantly reduced daily drinking when the subjects received a mail-based guided CBT treatment condition plus PCP feedback compared to only receiving the guided CBT condition (Kavanagh & Connolly, 2009).

The third publication in this category was rated *fair* for not meeting the representative samples criterion. This mail-based RCT reported no significant differences between a mail-based MI guided treatment and a mailed pamphlet on the effects of alcohol use (Sobell et al., 2002).

Primary care physician interventions

Of the four publications included in the primary care physician interventions category one was rated *good*. This Swedish study, possessing a largely representative sample of baby boomers, found no difference in drinking reduction between a nurse practitioner feedback condition versus a self-monitoring condition among subjects screened for harmful alcohol use in a workplace setting.

The three studies remaining in this category were all rated *fair*. Two did not meet the representative samples criterion, while the other did not possess a sufficient control group. The former two studies both compared the effects of outpatient physician-based discussion and feedback related to drinking versus a condition in which the subjects were provided a pamphlet on the effects of alcohol use. Both studies found that PCP feedback, using MI-based techniques, significantly reduced alcohol-use compared to receiving a pamphlet among patients screened for harmful drinking (Fleming, Barry, Manwell, Johnson, & London, 1997; Saitz, Horton, Sullivan, Moskowitz, & Samet, 2003). Moreover, one of these studies found that outpatient physicians were significantly more effective compared to their faculty-based physician counterparts in patient reduction of alcohol use (Saitz et al., 2003). The third study rated *fair* in this category

found no difference among a largely representative sample of baby boomers between a physician-based feedback plus pharmacotherapy condition versus a CBT plus pharmacotherapy condition; subjects in both conditions reported a reduction in drinking at the end of treatment. However, at a 6-month follow-up, subjects receiving the physician-based condition in this latter study reported sustained improvement compared to subjects in the CBT condition (O'Malley et al., 2003).

Outpatient day-treatment interventions

Three publications were included in the outpatient day-treatment interventions category, two were rated *fair* and one was rated *poor*. Of the two studies rated *fair*, both consisted of age-group comparison designs in which subjects were randomly assigned to a day-treatment condition or TAU. One of these studies found no difference between treatments among young, middle, and older-adult groups (Satre, Mertens, Areán, & Weisner, 2003). The second study was a 5-year follow-up of the first study. This follow-up study found that across treatments the age group predominantly representative of baby boomers had maintained a reduction in alcohol use after 5 years compared to younger and older age groups (Satre, Mertens, Areán, & Weisner, 2004).

One study in this category was rated as *poor* for possessing a small, all-male sample size (*N = 42*) and failing to report study attrition. The study reported that intensive day treatment plus contingency management significantly increased the number of days abstinent in the past month when compared to a TAU condition among veterans, all of which were baby boomers at a VA outpatient clinic (Petry, Martin, Cooney, & Kranzler, 2000).

Discussion

This scoping review sought to collect and disseminate evidence related to effective interventions for baby boomers struggling with alcohol-use disorders. Of over 7,000 publications found to be potentially related to this area of research, 19 publications were selected based upon an extensive criteria protocol. The majority of these studies reported results of interventions where subjects possessed a diagnosis of alcohol dependence or abuse consistent with past editions of the *Diagnostic and Statistical Manual of Mental Disorders* (i.e., DSM-IV, DSM-IV-TR; American Psychiatric Association, 1994; 2000).

The publications in this review were grouped by intervention category and, within each category, the studies were reported in descending order according to study-design quality ratings (see Table 1). As a result, this review provides a means for rapid assessment of the most effective interventions for baby boomers with alcohol-use disorders.

In brief, this review's primary finding was that no experimental research could be found that examines the effects of alcohol-use interventions among exclusive samples of baby boomers. In addition, this review found that among alcohol-use disorder intervention research few studies possessed a large enough proportion of baby boomers in their samples in order to sufficiently draw conclusions regarding practice recommendations.

However, among the 19 studies that were found as a result of this review, findings from studies that possessed the highest methodological rigor suggested that established cognitive-behavior based treatments for alcohol-use disorders, provided in outpatient settings or as mail-based guided protocols, are effective in reducing drinking among baby boomers (Anton et al., 2006; Kavanagh & Connolly, 2009; Kavanagh et al., 1999).

In addition, among the subset of publications that did not meet the most rigorous methodological guidelines - but satisfied nearly all criteria - the findings suggest again that established cognitive-behavior based treatments in outpatient settings are effective for reducing alcohol-use among baby boomers struggling with alcohol-use disorders. In addition, the evidence from this subset of publications rated *fair* also suggests that brief motivational-enhancement interventions in outpatient settings, particularly provided by physicians in primary care settings, are effective in reducing alcohol-use among baby boomers.

Of the publications that met the lowest levels of criteria for methodological rigor, two studies' findings suggested that CBT plus pharmacotherapy was more effective than CBT alone. Another study reported that a contingency-based intervention provided in a day-treatment setting was more effective than TAU.

Furthermore, the findings from this review suggest that the success of the above interventions may remain stable across the life courses of baby boomers. That is, these interventions appeared to be effective across time (i.e., when baby boomers were middle-aged in the 1990s, as well as when baby boomers were late-middle aged and entering older age in the 2000's).

Practice Implications, Limitations, and Future Recommendations

Prior to offering practice recommendations based upon the synthesized findings from this scoping review, several important limitations of this review must first be stated. First, only studies published in the English language were included in this review. In addition, no attempt was made to incorporate unpublished works, such as dissertations or other manuscripts, into this review. Moreover, since the publications were assigned ratings based upon methodological and design qualities, the effectiveness of certain interventions may have been contingent upon the

quality of the research conducted. In addition, no research studies were obtained that studied baby boomers exclusively. This review was performed by a single person (i.e., the primary author) and therefore lacks interrater reliability. Therefore, the conclusions drawn in this review may be somewhat confounded by the use of studies in which baby boomers comprised a large majority of the sample only.

With these limitations in mind, some important recommendations for social work research and practice emerged from the findings of this review. First, as noted throughout this article, this review's results indicate that research examining the effects of alcohol-use treatments among exclusive samples of baby boomers is substantially needed, particularly in the coming decade as baby boomers continue to enter retirement age. Second, longitudinal research is needed which examines alcohol-use patterns among baby boomers in order to better understand the extent to which baby boomers as they enter older adulthood to use excessive amounts of alcohol - as the literature suggests - in contrast to what has previously been known about the process of "aging-out" among older-adult cohorts. Implications for healthcare and treatment need are directly linked to the extent to which baby boomers increase their risk of alcohol-related health problems.

A number of implications for clinical social work practice emerged from this review related to practice, research, and policy. First, established cognitive-behavior based treatments and brief physician delivered motivational-enhancement interventions may be the most effective treatments for reducing drinking among alcohol dependent/abusing baby boomers. This finding is apparent across quality of study design as well as across category of intervention. Cognitive behavior-based interventions were successful in drinking reduction when provided in a traditional outpatient format, as well as when provided as a mail-based guided format. This

latter mail-based intervention protocol may provide a cost-effective means to reach large numbers of baby boomers who struggle with alcohol-use disorders; internet-based interventions, similar to the mail-based protocols, may be effect as well. Likewise, motivational enhancement-based interventions were particularly effective in conjunction with brief physician discussion and feedback. Regarding research implications, these findings suggest that future research is needed that examines exclusive birth cohorts of baby boomers. In addition, these findings imply that further research should be focused on brief treatments and mail-based interventions that target baby boomers with alcohol-related problems. These findings also possess policy implications as well. Given future increases in treatment need as baby boomers enter older-adulthood, cost-effective interventions, mail- or internet-based in particular, will be important to emphasize at the funding and policy levels.

Conclusion

As an unprecedentedly large cohort of baby boomers enters older adulthood, initial research suggests that differences may emerge in patterns of alcohol use in later life and the subsequent treatment needs, particularly related to treatment delivery. Given the dearth of research that exists - specifically examining alcohol-use treatment among exclusive samples of baby boomers - this scoping review was conducted in order to contribute further knowledge to social work theory, research, and practice. The findings from this review suggest that baby boomers struggling with alcohol-use disorders may be most responsive to cognitive-behavior and motivational enhancement-based interventions. In addition, the findings suggest that future research and policy may need to focus on cost-effective, brief interventions.

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Table 2.1. *Summary of evaluations of interventions for alcohol-using baby-boomers*

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
Clinic-Based Psychosocial Interventions					
1. Anton, R. F., O'Malley, S.,S., Ciraulo, D. A., Cisler, R. A., Couper, D., Donovan, D. M., . . . Zweben, A. (2006)					
Comparative treatments RCT Conducted: 2001-2004	Good: representative sample, defined intervention, control group used, reliable outcomes	Eleven academic-based treatment clinics (n = 1383 alcohol-dependent subjects) treatment 1: group 1 (n=153), group 2 (n = 154), group 3 (n = 152), group 4 (n = 148); treatment 2: group 1 (n = 156), group 2 (n = 155), group 3 (n = 151), group 4 (n = 157); treatment 3 (n = 157); age: treatment 1: group 1 (M = 44.2; SD = 9.15), group 2 (M = 44.4; SD = 9.93), group 3 (M = 44.0; SD = 10.97), group 4 (M = 44.2; SD = 10.83); treatment 2: group 1 (M = 43.2; SD = 9.74), group 2 (M = 45.2; SD = 10.08), group 3 (M = 45.4; SD = 10.08), group 4 (M = 45.0; SD = 10.40); treatment 3: (M = 45.2; SD = 10.41); gender: treatment 1: group 1 (67% male), group 2 (68.2% male), group 3 (69.1% male), group 4 (71.6% male); treatment 2: group 1 (70.5% male), group 2 (68.4% male), group 3 (70.9% male), group 4	Treatments (16 weeks of outpatient treatment) treatment 1: medical management plus medication: group 1 (placebo), group 2 (acamprosate), group 3 naltrexone, group 4 acamprosate and naltrexone; treatment 2: combined behavioral intervention (CBI) plus medical management and medication: group 1 (placebo), group 2 (acamprosate), group 3 naltrexone, group 4 acamprosate and naltrexone treatment 3: behavioral intervention only, no medication Follow-up: 1 year post-treatment	No measurement validation reported; no previous validation statistics reported	All groups showed reduction in drinking. CBI plus medical management and placebo as well as CBI plus medical management and naltrexone had significantly higher percent days abstinent (as measured by number of heavy drinking days) compared to the other treatment groups. The CBI only group had significantly higher percent days abstinent than the medical management and placebo group.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		(67.5% male); treatment 3 (68.2% male); ethnicity: treatment 1: group 1 (78.4% white, 6.5% African American, 11.1% Hispanic), group 2 (70.1% White, 11.7% African American, 16.2% Hispanic), group 3 (80.3% White, 6.6% African American, 9.9% Hispanic), group 4 (79.1% White, 7.4% African American, 10.1% Hispanic); treatment 2: group 1 (73.1% White, 9.6% African American, 13.5% Hispanic), group 2 (79.4% White, 5.8% African American, 11.6% Hispanic), group 3 (74.8% White, 9.3% African American, 10.6% Hispanic), group 4 (79.0% White, 8.3% African American, 7.0% Hispanic); treatment 3: (77.1% White, 5.7% African American, 10.8% Hispanic); relationship status: treatment 1: group 1 (44.4% married), group 2 (38.3% married), group 3 (36.2% married), 42.6% married); treatment 2: group 1 (50.0% married), group 2 (37.4% married), group 3 (44.4% married), group 4 (43.3% married); treatment 3 (41.4% married); employment: treatment 1: group 1 (79.7% employed), group 2 (72.7% employed),			

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		group 3 (71.7% employed), group 4 (70.9% employed); treatment 2: group 1 (71.8% employed, group 2 (76.8% employed), group 3 (70.9% employed), group 4 (70.7% employed); treatment 3: (69.4% employed); education: treatment 1: group 1 (29.4% high school (h.s.) grads), group 2 (35.7% h.s. grads), group 3 (25.7% h.s. grads), group 4 (25.7% h.s. grads); treatment 2: group 1 (30.1% h.s. grads), group 2 (26.5% h.s. grads), group 3 (28.5% h.s. grads), group 4 (29.3% h.s. grads); treatment 3: (28.0% h.s. grads)			

2. Saitz, R., Palfai, T. P., Cheng, D. M., Horton, N. J., Freedner, N., Dukes, K., . . . Samet, J. H. (2007)

RCT Conducted: 2001-2003	Good: representative sample, defined intervention, control group used, reliable outcomes	Inpatient urban hospital setting (n = 341 risky alcohol drinkers [77% alcohol dependent]) treatment (n = 172), control (n = 169); age: treatment (M = 45; SD = 11), control (M = 44; SD = 11); gender: treatment (77%	Treatments treatment: one, 30-minute session of motivation counseling during patients inpatient stay control: inpatient treatment-as-usual (TAU)	No measurement validation reported; no previous validation statistics reported	All patients as well as patients diagnosed with alcohol dependence who received the treatment did not report significantly different alcohol assistance-seeking at 3 months or significantly different drinks

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		male), control (65% male); ethnicity: treatment (39% White, 44% African American, 10% Hispanic), control (39% White, 47% African American, 8% Hispanic); employment: treatment (65% unemployed), control (62% unemployed); housing: treatment (27% homeless), control (23% homeless)	Follow-up: 3 month (80% retention) and 12 months (84% retention) post-baseline		per day at 12 months compared to the control group.
3. Anton, R. F., Moak, D. H., Latham, P., Waid, L. R., Myrick, H., Voronin, K., . . . Woolson, R. (2005)					
Comparative treatments RCT Conducted: 1992-2002	Fair: no control group, representative sample, defined intervention, reliable outcomes	Outpatient alcohol treatment clinic (n = 160 alcohol-dependent subjects) treatment 1 (n = 41), treatment 2 (n = 39), treatment 3 (n = 39), treatment 4 (n = 41); age: treatment 1 (M = 45 ; SD = 11), treatment 2 (M = 44; SD = 8), treatment 3 (M = 43; SD = 9), treatment 4 (M = 43; SD = 10);gender: treatment 1 (73% male), treatment 2 (79% male), treatment 3 (77% male), treatment 4 (73% male); ethnicity: treatment 1 (90% white), treatment 2 (77% white), treatment 3 (92% white), treatment 4 (78% white); relationship status: treatment 1 (41% married), treatment 2 (33% married), treatment 3 (35% married), treatment 4 (46%	Treatments treatment 1: 12 weeks of cognitive-behavior treatment (CBT) plus placebo daily; treatment 2: 12 weeks of CBT plus naltrexone daily; treatment 3: 4 sessions of MET over 12 weeks, plus placebo daily; treatment 4: 4 sessions of MET over 12 weeks, plus naltrexone daily. Overall completion: 81%; No follow-up.	No measurement validation reported; no previous validation statistics reported	Significantly fewer CBT plus naltrexone-treated subjects relapsed, as measured by number of heavy-drinking days, during and at the end of treatment compared to the other 3 treatments. In addition, the CBT-naltrexone group had a significantly higher percentage of days abstinent.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		married); employment: treatment 1 (93% employed), treatment 2 (92% employed), treatment 3 (92% employed), treatment 4 (73% employed); education (years): treatment 1 (M = 15; SD = 2), treatment 2 (M = 14; SD = 2), treatment 3 (M = 15; SD = 2), treatment 4 (M = 14; SD = 3)			

4. Breslin, F. C., Sobell, M. B., Sobell, L. C., Sdao-Jarvie, K., & Sagorsky, L. (1996)

Comparative treatments RCT, 6-month follow-up Conducted: 1991-1992	Fair: no control group, representative sample, defined intervention, reliable outcomes	Outpatient addiction clinic (n = 129 at-risk drinkers) treatment 1: (n = 67), treatment 2: (n = 62); age: (M = 37.3; SD = 8.82); gender: (64% male); relationship status: (49% married); employment: (89% employed); education: (M = 14.8 years; SD = 3.5)	Treatments (2-hour assessment, and two 90-minute individual therapy sessions) treatment 1: Behavior Counseling, treatment 2: behavioral counseling plus cognitive relapse prevention Completion: 77% Follow-up: 62% at 6-months post-treatment	Interrater reliability reported for cognitive coping strategies instrument; no previous validation statistics reported	The proportion of cognitive coping strategies (i.e., thinking through consequences) subjects demonstrated during treatment was positively related to post-treatment drinking, measured by number of drinks reported after 6 months. Both treatment groups demonstrated reduction in drinking at 6-months post-treatment

5. Freyer-Adam, J., Coder, B., Baumeister, S. E., Bischof, G., Riedel, J., Paatsch, K., . . . Hapke, U. (2008)

Multisite German RCT Conducted:	Fair: not representative, defined intervention,	Inpatient hospital setting (n = 415 alcohol-abusing subjects) treatment 1 (n = 184), treatment	Treatments (4 months, weekly brief sessions) treatment 1: motivational	No measurement validation reported; no previous	At 12-month follow-up all three treatment groups significantly decreased their alcohol consumption,

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
2002-2004	control group used, reliable outcomes	2 (n = 76), control (n = 155); age: treatment 1 (M = 42.52; SD = 12.12), treatment 2 (M = 38.8; SD = 13.79), control (M = 40.4; SD = 12.4), total (M = 41.05; SD = 12.6); gender: treatment 1 (94.02% male), treatment 2 (94.74% male). control (93.55% male); relationship status: treatment 1 (70.17% with intimate partner), treatment 2 (55.26% with intimate partner), control (62.59% with intimate partner); education: treatment 1 (16.67% > 11 years), treatment 2 (24.32% > 11 years), control (17.11% > 11 years); employment: treatment 1 (44% employed), treatment 2 (46.67% employed), control (44% employed)	interviewing (MI) with trained counselor treatment 2: MI with trained hospital physician control: treatment-as-usual (TAU) Follow-up: 12 months from baseline (70% retention)	validation statistics reported	measured by number of drinks per day. However, subjects who received either of the two treatments reported significant increases in readiness-to-change drinking compared to the controls.

6. Oslin, D. W., Lynch, K. G., Maisto, S. A., Lantinga, L. J., McKay, J. R., Possemato, K., . . . Wierzbicki, M. (2014)

Multisite RCT (nearly all male sample) Conducted: 2007-2008	Fair: not representative, defined intervention, control group used, reliable outcomes, attrition not documented	VA healthcare system, outpatient alcohol treatment (n = 163 alcohol-dependent subjects) treatment (n = 85), control (n = 78); age: treatment (M = 54.86; SD = 11.43), control (M = 57.07; SD = 10.07); gender: treatment (100% male), control (93.59% male); ethnicity: treatment (41.18% White), control (43.59% White); employment:	Treatments (26-week treatment) treatment: alcohol management care (ACM) with aspects of motivational interviewing and psychoeducation, plus naltrexone (weekly, 30-minute sessions) control: standard specialty care based on a 12-step facilitation model, including	No measurement validation reported; no previous validation statistics reported	Significantly less attrition found for subjects assigned to treatment group. The treatment group reported significantly less heaving drinking days compared to the control group. Overall abstinence was not significantly different between groups.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		treatment (35.29% employed), control (25.64% employed)	pharmacotherapy (intensive outpatient program) No follow-up reported.		

7. Rice, C., Longabaugh, R., Beattie, M., & Noel, N. (1993)

Randomized matched comparison study Conducted: 1984-1986	Fair: no control group, representative sample, defined intervention, reliable outcomes	Outpatient alcohol treatment (n = 229 alcohol dependent [81%] and abusing subjects) age: total sample (M = 38.7; SD = 12.3); age groups: 18-29 yo (n = 53), 30-49 yo (n = 134), 50+ yo (n = 42); gender: total (69% male); ethnicity: total sample (78.2% White, 3.5% African American, 10% Other, 7.9% did not identify); relationship status: total sample (29.7% single, 45.4% married, 22.3% divorced/separated, 2.6% widowed); employment: total sample (72.5% employed); education: total sample (M = 12.9 years; SD = 2.8)	Treatments (18 weekly sessions) treatment 1: CBT, individual or group treatment 2: relationship enhancement treatment (RE), with 8 sessions devoted to conjoint therapy with intimate partner or family member treatment 3: occupational therapy with a relational component Two post-treatment booster sessions provided (3 and 12 months) 3-month follow-up data obtained (83% retention)	Interrater reliability statistics reported for drinking behavior measure; no previous validation statistics reported	Significant age-group differences were found for treatment outcome. No significant difference in outcome, measured by number of heavy drinking days, between the 3 treatments was found for the 18-29 age group. However, the 30-49 age group had significantly better outcomes in treatment 2 (RE). In contrast the 50+ age group had significantly better outcomes in treatment 1 (CBT).

8. Feeney, G. F., Young, R. M., Connor, J. P., Tucker, J., & McPherson, A. (2001)

Non-randomized historical cohort matched comparison	Poor: no random assignment, attrition not documented	Abstinence-based outpatient treatment program (n = 100 alcohol-dependent subjects) treatment (n = 50), matched	Treatments (8 sessions over 12 weeks) treatment: CBT plus naltrexone control: CBT only	No measurement validation reported; no previous validation	Subjects receiving CBT plus naltrexone relapsed, measured by number of drinks post baseline, significantly less over the

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
Australian study Conducted: 1998		control (n = 50); age: treatment (M = 42.9; SD = 10.62), control (M = 45.04; SD = 10.34); gender: treatment (66% male), control (66% male)	No follow-up reported	statistics reported	12-week treatment period compared to historically matched subjects who receiving CBT only. The proportion of subjects abstinent at 12 weeks was significantly higher in the CBT plus naltrexone group (76%) compared to the CBT only group (18%). Program attendance was significantly lower in the CBT only group.
9. Feeney, G. F. X., Young, R. M. D., Connor, J. P., Tucker, J., & McPherson, A. (2002)					
Non-randomized historical cohort matched comparison Australian study Conducted: 2000	Poor: no random assignment, attrition not documented	Abstinence-based outpatient treatment program (n = 100 alcohol-dependent subjects) treatment (n = 50), matched control (n = 50); age: treatment (M = 42.56; SD = 9.45), control (M = 45.44; SD = 9.84); gender: treatment (66% male), control (66% male)	Treatments (8 sessions over 12 weeks) treatment: CBT plus acamprosate control: CBT only No follow-up reported	No measurement validation reported; no previous validation statistics reported	Subjects receiving CBT plus acamprosate relapsed, measured by number of drinks post-baseline, significantly less over the 12-week treatment period compared to historically matched subjects who receiving CBT only. The proportion of subjects abstinent at 12 weeks was significantly higher in the CBT plus acamprosate group (38%) compared to the CBT only group (14%). Program attendance was not significantly different between groups.
Mail-Based Psychosocial Interventions					

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
10. Kavanagh, D. J., Sitharthan, T., Spilsbury, G., & Vignaendra, S. (1999)					
Comparative RCT with delayed treatment condition Conducted: 1995-1996	Good: representative sample, defined intervention, control group used, reliable outcomes	Mail-based correspondence treatment for problem drinkers (n = 148 alcohol abusing or dependent subjects) treatment 1 (n = 38), treatment 2 (n = 36), treatment 3 (n = 37), treatment 4, n = 37); gender: treatment 1 (47% male), treatment 2 (56% male), treatment 3 (46% male), treatment 4 (46% male); age: total sample (M = 44.5; SD = 10.2); relationship status: total sample (64% living with partner); employment: total sample (65% full-time employment); education: total sample (30% completed at least 15 years of education)	Treatments treatment 1: immediate cognitive behavior treatment by correspondence (ICBT), subjects mailed 1 letter with CBT-based strategies every two weeks over 6 weeks treatment 2: brief self-monitoring, subjects mailed 1 letter of advice to monitor drinking, CBT delayed 2 months treatment 3: extended self-monitoring, subjects mailed 1 letter of advice to monitor drinking, CBT delayed 6 months treatment 4: 2-month waitlist for ICBT Follow-up: 2-, 6-, and 12-months post-baseline	Cronbach's alpha reported for current study; citation provided for previous validation statistics	At 2 months, subjects receiving the CBT treatment had significantly decreased alcohol intake, measured by drinks per day, compared to the other treatments in which the subjects received delayed CBT. At 12-months post-baseline, all subjects had received the CBT treatment. In total, subjects reported a significant decrease (48%) in alcohol intake.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
11. Kavanagh, D. & Connolly, J. M. (2009)					
Comparative RCT with delayed treatment condition Conducted: 2004 -2005	Good: representative sample, defined intervention, control group used, reliable outcomes	Mail-based correspondence treatment for problem drinkers with primary care provider-involvement (n = 204 alcohol abusing or dependent subjects) treatment (n = 103), control (n = 101); age: total sample (M = 47.8; SD = 10.8); gender: treatment (56% male), control (43% male); relationship status: total sample (72% current partner, 13% divorced/separated, 15% never partnered); employment: total sample (69% employed, 11% retired, 10% at home, 5% unemployed); education: total sample (34% not completed high school).	Treatments (in both treatments for 6 months patients submitted monthly self-monitoring reports and researchers corresponded with summarized progress and CBT-based advice and feedback) treatment (immediate): patients' primary care providers (PCP) received patients' monthly alcohol use status/progress and guidelines on addressing alcohol disorders in general practice control (delayed): patients' PCPs did not receive patients' progress or guidelines on addressing alcohol disorders; patients receiving 3-month delayed correspondence Follow-up: 3-, 6-, 9-, and 12-month post-baseline (50% retention at 12 months)	No measurement validation reported; no previous validation statistics reported	At 3 months post-baseline, patients receiving the immediate treatment showed significantly greater reductions in alcohol use per week, measured by number of drinks, and drinking days compared to the delayed treatment control. However, at later follow-ups both conditions showed continued elevated alcohol use.
12. Sobell, L. C., Sobell, M. B., Leo, G. I., Agrawal, S., Johnson-Young, L., & Cunningham, J. A. (2002)					
Comparative RCT Conducted: 1995-1996	Fair: not representative, defined intervention, control group	Community-level mail intervention (n = 825 alcohol abusing subjects)	Treatments treatment 1: motivational enhancement personalized feedback based on initial	No measurement validation reported; previous validation cited,	No significant difference was found between treatments for reduction in drinking. Both treatment groups reported significant

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
	used, reliable outcomes	treatment 1 (n = 414), treatment 2 (n = 411); age: total sample (M = 47.5; SD = 11.8); gender: total sample (76.9% male); ethnicity: total sample (94.4% White); relationship status: total sample (60.6% married); employment: total sample (60.4% employed); education: total sample (30.7% college degree)	telephone screening treatment 2: bibliotherapy/drinking guidelines Follow-up: 12 months (79.6% retention)	no statistics reported	reductions in drinking from 1 year before to 1 year after the interventions.
Primary Care Physician Interventions					
13. Hermansson, U., Helander, A., Brandt, L., Huss, A., & Rönnberg, S. (2010)					
Swedish RCT in workplace setting Conducted: 1997-2001	Good: representative sample, defined intervention, control group used, reliable outcomes	Workplace risky alcohol consumption screening and intervention (n = 194 subjects testing positive for harmful alcohol use) treatment 1 (n = 58), treatment 2 (n = 66), control (n = 70); age: total (M = 43.2; SD = 9.6), men (M = 43.1; SD = 9.7), women (M = 43.5; SD = 9.5); gender: treatment 1 (76% male), treatment 2 (77% male), control (79% male);	Treatments treatment 1: 15-minute session with a nurse where subjects were given individual feedback on his or her initial alcohol screening results, and written feedback on avoiding hazardous alcohol consumption treatment 2: Subjects offered choice of up to 3 different sessions: 1st session (treatment 1), 2nd session (systematic recall of past 14 days of alcohol consumption), 3rd session (subjects offered to keep a self-monitoring drinking diary over 4 weeks, recording alcohol consumption of daily basis); 2nd	No measurement validation reported; no previous validation statistics reported; strong test-retest findings cited	At the 12-month post-baseline follow-up, no significant difference was found between the two treatment groups or between the treatment groups and the control on harmful alcohol use. All groups showed a significant decrease in harmful alcohol use.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
			and 3rd sessions provided by counselor no-intervention control: subjects received an alcohol screening, but no feedback or counseling until 12-month follow-up Follow-up: 12-months post baseline (81% retention)		
14. Fleming, M. F., Barry, K. L., Manwell, L. B., Johnson, K., & London, R. (1997)					
Multisite RCT Conducted: 1992-1994	Fair: not representative, defined intervention, control group used, reliable outcomes	Community-based primary care practices (n = 774 problem-drinking patients) treatment (n = 392), control (n = 382); age: treatment (18-30 yo: 29%; 31-40 yo: 27%; 41-50 yo: 21%; 51-65 yo: 23%), control (18-30 yo: 29%; 31-40 yo: 29%; 41-50 yo: 20%; 51-65 yo: 21%); gender: treatment (51% male), control (49% male); ethnicity: treatment (89% White, 4% African American, 2% Hispanic, 2 Other), control (88% White, 4% African American, 1% Hispanic, 4% Other); relationship status: treatment (64% married), control (59% married); employment: treatment (2% unemployed), control (3% unemployed); education:	Treatments treatment: two 10- to 15-minute counseling visits, 1 month apart, with primary care physician (PCP) using a scripted workbook including advice, education, and contracting regarding patients' problem drinking control: patients received a booklet on general health issues Follow-up: 6- and 12-month post-baseline (93% retention)	No measurement validation reported; no previous validation statistics reported	At 12-month follow-up the treatment group reported significant reduction in drinking, as measured by number of drinks in past week, and binge-drinking, as measured by number of episodes in past 30 days, compared to the control group.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		treatment (21% college degree), control (17% college degree)			

15. O'Malley, S.,S., Rounsaville, B. J., Farren, C., Namkoong, K., Wu, R., Robinson, J., & O'Connor, P.,G. (2003)

Nested sequence of 3 RCTs Conducted: 1993-1997	Fair: no control group, representative sample, defined intervention, reliable outcomes	Outpatient alcohol treatment unit of hospital (n = 190 alcohol dependent subjects) treatment 1a (n = 93), treatment 1b (n = 97), treatment 2a (n = 26), control 2a (n = 27), treatment 2b (n = 30), control 2b (n = 30); age: total (i.e., treatment+control) 2a (M = 43.8; SD = 8.6), total 2b (M = 44.5; SD = 9); gender: total 2a (70% male), total 2b (72% male); ethnicity: total 2a (95% White, 4% African American, 1% Hispanic), total 2b (93% White, 3% African American, 3% Hispanic); relationship status: total 2a (46% married), total 2b (44% married); employment: total 2a (81% employed), total	Treatments treatment 1a (10 weeks): primary care management (PCM) plus naltrexone treatment 1b (10 weeks): CBT plus naltrexone treatment 2a (24 weeks): primary care management maintenance plus naltrexone control 2a (24 weeks): primary care management maintenance plus placebo treatment 2b (24 weeks): CBT maintenance plus naltrexone	No measurement validation reported; no previous validation statistics reported	No significant differences were found between the initial 10 week treatments of PCM plus naltrexone and CBT plus naltrexone. Subjects in both 10-week treatments reported significant decrease in number of days abstinent. In the following 24-week maintenance of improvement treatment, subjects in the PCM plus naltrexone had significantly better maintenance of improvement compared to the CBT plus naltrexone group.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		2b (74% employed); education: total 2a (70% more than high school), total 2b (68% more than high school)	control 2b (24 weeks): CBT maintenance plus placebo		
16. Saitz, R., Horton, N. J., Sullivan, L. M., Moskowitz, M. A., & Samet, J. H. (2003)					
Cluster RCT Conducted: 1998-1999	Fair: not representative, defined intervention, control group used, reliable outcomes	Urban academic primary care practice, faculty and resident physicians (n = 312 hazardous drinkers) treatment (n = 168), control (n = 144); age: treatment (M = 43.7; SD = 13), control (M = 42.2; SD = 12.9); gender: treatment (57% male), control (71% male); ethnicity: treatment (20% White, 63% African American, 10% Hispanic), control (18% White, 48% African American, 24% Hispanic); employment: treatment (40% unemployed), control (40% unemployed); education: treatment (62% high school education), control (65% high school education); income: treatment (median = $7,500), control (median = $7,500)	Treatments (single primary care visit) treatment: physician-facilitated discussion of alcohol consumption screening results and recommendations for patients (n = 20 physicians) control: physicians were not given the screening results to discuss with patients (n = 21 physicians) Six-month follow-up by telephone (76% retention)	No measurement validation reported; no previous validation statistics reported	Faculty physicians administered the treatment condition significantly more often than resident physicians. However, patients who were administered the treatment condition by resident physicians had significantly fewer mean drinks per drinking day (3.8 drinks) compared to their control counterparts (11.6 drinks). In contrast, no difference was found in patient drinking when provided treatment by faculty physicians.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
Outpatient Day-Treatment Interventions					
17. Satre, D. D., Mertens, J., Areán, P. A., & Weisner, C. (2003)					
Partial-randomization study of age-group differences Conducted: 1994-1996	Fair: no control group, representative sample, defined intervention, reliable outcomes	Kaiser Permanente Sacramento Chemical Dependency Program, health-maintenance program (HMO) (n = 1,204 patients were referred to treatment for alcohol and drug abuse) age groups: younger (18-39 yo; n = 736), middle (40-54 yo; n=379), older (55+ yo; n = 89) age: total sample (M = 37.3; SD = 11.1); age groups: younger (M = 30.4; SD = 6.3), middle (M = 45.1; SD = 3.8), older (M = 61.6; SD = 6.0); gender: younger (64% male), middle (70% male), older (76% male); ethnicity: younger (73% White, 12% African American, 10% Hispanic, 5% Other), middle (74% White, 15% African American, 9% Hispanic, 2% Other), older (93% White, 2% African American, 2% Hispanic,	Treatments (8-week program) treatment 1: day hospital, intensive daily treatment treatment 2: traditional outpatient program, 3 sessions per week Follow-up: 6-months post-treatment	No measurement validation reported; no previous validation statistics reported	The middle-aged group was significantly more likely to remain in treatment longer than the younger group. At 6-months post-treatment significantly more patients in the middle-aged group reported abstinence in the past 30 days compared to the younger group.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		2% Other); employment: younger (56% employed), middle (63% employed), older (31% employed); education: younger (65% high school grad.), middle (52% high school grad.), older (55% high school grad			
18. Satre, D. D., Mertens, J. R., Areán, P. A., & Weisner, C. (2004)					
5-year follow-up Partial-randomization study of age-group differences Conducted: 1994-1996	Fair: no control group, representative sample, defined intervention, reliable outcomes	Kaiser Permanente Sacramento Chemical Dependency Program, health-maintenance program (HMO) (n = 925 patients were contacted 5 years post-baseline, originally referred to treatment for alcohol and drug abuse) age groups: younger (18-39 yo; n = 564), middle (40-54 yo; n = 296), older (55+ yo; n = 65) age: total sample (M = 37.1; SD = 10.8); age groups: younger (M = 30.4; SD = 6.3), middle (M = 45.1; SD = 3.8), older (M = 61.6; SD = 6.0); gender: younger (61% male), middle (69% male), older (74% male); ethnicity: younger (74% White, 11% African American, 10% Hispanic, 5% Other), middle (73% White, 16% African American, 9% Hispanic, 2% Other), older (92% White, 2%	Treatments (8-week program) treatment 1: day hospital, intensive daily treatment treatment 2: traditional outpatient program, 3 sessions per week Follow-up: 5-year telephone follow-up (77% retention)	No measurement validation reported; no previous validation statistics reported	At 5 years post-baseline, a significantly greater number of middle-age patients reported total abstinence in the previous year as well as total abstinence in the previous 30 days compared to the younger group (year: 42% vs. 29%; 30 days: 49% vs. 40%). However, the alcohol addiction severity index was not significantly different between age groups at 5 years.

Treatment Type, Study, and Design	Quality Rating	Study Setting and Participants	Interventions and Follow-up	Measurement Validation	Study Outcomes
		African American, 3% Hispanic, 3% Other); employment: younger (56% employed), middle (65% employed), older (33% employed); education: younger (65% high school grad.), middle (53% high school grad.), older (52% high school grad.); length of stay in hospital: younger (M = 6.2 weeks; SD = 11.5), middle (M = 11.4; SD = 16.7), older (M = 12.4; SD = 18.4)			
19. Petry, N. M., Martin, B., Cooney, J. L., & Kranzler, H. R. (2000)					
Small-sample RCT (male only) Conducted: 1997-1999	Poor: not representative sample, sample size less than 50 per experimental group, attrition not documented	VA healthcare system, outpatient substance use clinic (n = 42 alcohol-dependent veterans) treatment (n = 19), control (n = 23); age: treatment (M = 47; SD = 2), control (M = 47; SD = 2); gender: 100% male; ethnicity: treatment (68% White, 26% African American, 6% Hispanic), control (61% White, 34% African American, 5% Hispanic); employment: treatment (21% employed), control (13% employed)	Treatments treatment: contingency management plus standard treatment (CM), 8 weeks control: standard treatment, 4 weeks of an intensive outpatient program No follow-up reported	No measurement validation reported; no previous validation statistics reported	Subjects assigned to the treatment group were found to have a significantly higher retention rate (84%) compared to the control group (22%). At the end of treatment the CM group had significantly more abstinent subjects compared to the control group. Treatment subjects earned an average of $200 in prizes.

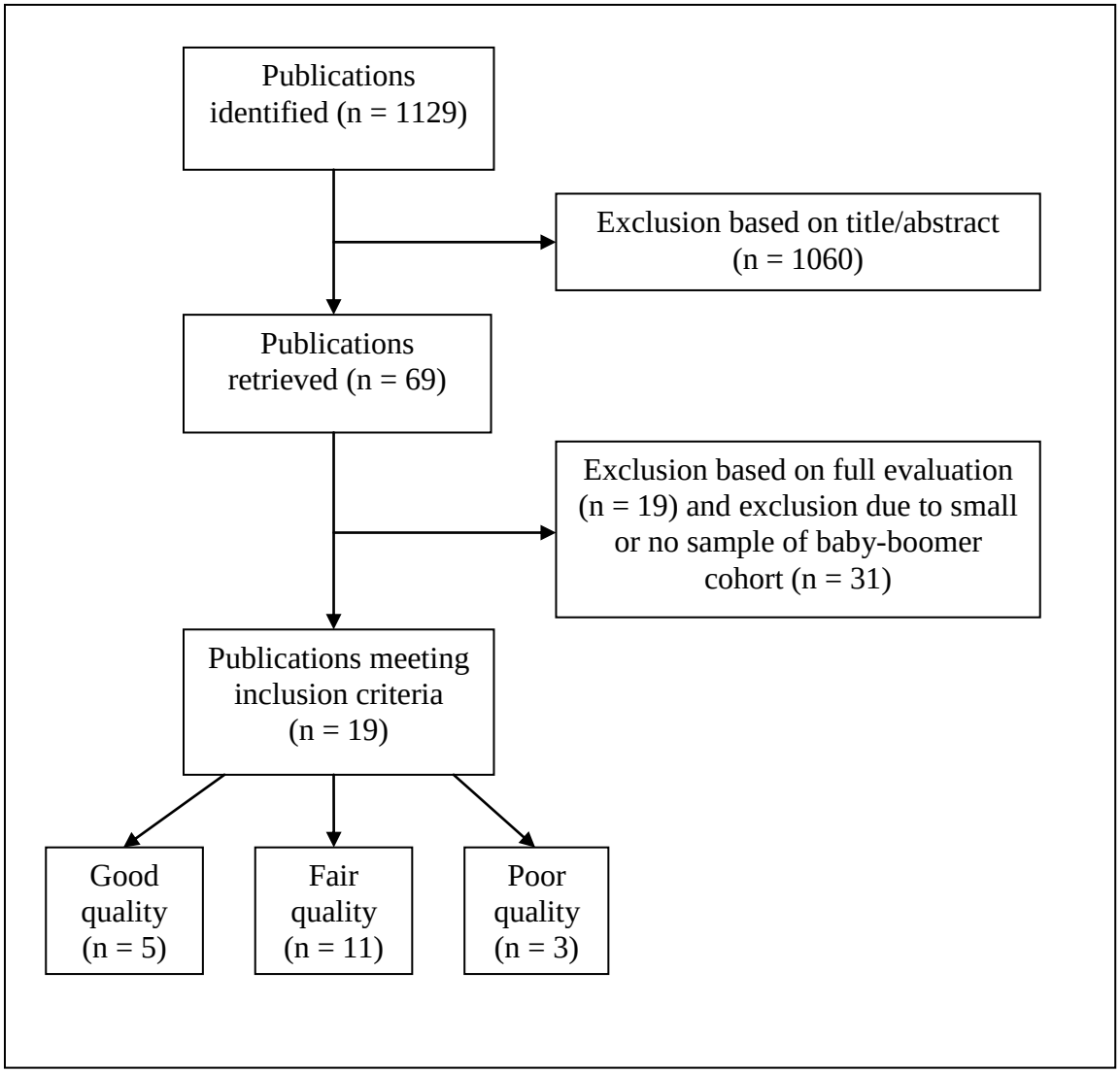

Figure 2.1. QUORUM flow chart.

CHAPTER 3

FACTORS THAT IMPACT ALCOHOL USE DISORDERS AMONG BABY BOOMERS ACROSS THE LIFE COURSE

Previous research suggests that as adults age the patterns and predictors of alcohol use tend to be affected by regional/cultural variations, drinking behaviors across the life course, risk and protective factors, and life events which may influence the onset and recurrence of alcohol-use (St John, Snow, & Tyas, 2010). For example, the prior evidence suggests that older adults abuse alcohol and other legal drugs, such as prescription and non-prescription medications, more often than illicit drugs such as marijuana, cocaine, and heroin (Petrovic, van der Cammen, & Onder, 2012). In addition, past research findings suggest that older adults frequently "age out" of problem drinking behaviors beginning at age 60 and decreasing further at age 70 (Breslow, & Smothers, 2004; Memmott, 2003).

However, as the unprecedented, large birth cohort known as "baby boomers" begin to enter the stages of older adulthood, novel findings have emerged. Recent research suggests changes in alcohol usage patterns among baby boomers compared to previous older-adult counterparts (Duncan, Nicholson, White, Bradley, & Bonaguro, 2010). For example, baby boomers have been found to possess higher rates of binge drinking, lower reported rates of alcohol abstention and, in general, higher rates of alcohol-use disorders compared to their older counterparts (Choi, DiNitto, & Marti, 2015). In summary, the emerging evidence suggests that as baby boomers enter older adulthood, unique alcohol-use patterns may become apparent (Gfroerer, Penne, Pemberton, & Folsom, 2003).

In 2006 the first of the baby-boomer birth cohort turned 60 years old. Since then, each year additional baby boomers have entered into, what is typically thought to be, early older adulthood. Furthermore, according to the U.S. Census Bureau, in 2010 the number of U.S. adults 65 years or older was 40.2 million (U.S Census Bureau, 2011). However, when the last of the baby boomers turns 65 in 2029 the U.S. Census Bureau (2012) projects that approximately 71.4 million adults will be 65 years or older. During this 28-year period (i.e., 2011-2029), the population of older adults in the U.S. age 65 or older will increase approximately 78%, while the total U.S. population will increase by approximately 17%, and the population of individuals under 65 years of age will increase by only 6%.

Likewise, in the first decade of the 21st century, research projected that the number of adults age 60 or older requiring substance-use treatment would increase from by 134% or about 3 times the treatment needed in the year 2000 (Gfroerer et al., 2003). This trend is expected to continue for the next two to three decades, as the last of the baby-boomer cohort will not reach age 60 until 2024 and age 65 in 2029. In addition, research suggests that prior to the baby boomers entering older adulthood, approximately 2.5 million older adults in the U.S. possessed an alcohol-use disorder, in particular. However, by 2020 this number is expected to double to 5 million, with alcohol-use treatment need for older adults doubling as well (Duncan et al., 2010). The evidence suggests that a life course theory related to patterns of alcohol-use disorders among baby boomers may be a needed approach to understand future alcohol treatment needs of baby boomers (Anstey, 2008; Barrett & Toothman, 2014; Stowe & Cooney, 2015).

The Life course theory

The life course theory of human development emerged as an influential theory of aging in the 1970s, with initial contributions by Elder (1975) in the field of sociology. Elder (1975)

suggested that a life course theory would require attention to the temporal dimensions of aging, including (a) chronological age as an index within which the stages of the aging process could be measured, (b) social age, such as marriage and retirement, as a way to understand the influence of norms and social roles in the aging process, and (c) historical age which referred to a person's birth year or the particular location in history in which a person and his or her cohort lived (Elder, 1985; 1994).. Broadly defined, the life course theory attempts to explain an individual's lifespan as a set of interwoven trajectories or pathways that are subject to alteration contingent upon immediate conditions, future options, and short-term transitions which emerge throughout life and which are rooted in an individual's cultural and social traditions (Elder, 1994). In this way, trajectories, transitions, and turning points are considered primary constructs in understanding the complex web of the human life course. Trajectories refer to long-term patterns of behavior composed of sequences of embedded transitions. Transitions are used to describe shorter-term spans of time during which significant events occur, such as leaving school, establishing a job, becoming pregnant, or committing a crime, which may trigger both short- and long-term consequences across the life course. Turning points are those events that are triggered by the interplay of trajectories and embedded transitions or may be adaptations to transition events that have otherwise resulted in later consequences. The means through which an individual can manage transitions and turning points may result in varying stress-response patterns which are thought to affect the emergence of health-promoting or health-inhibiting behaviors (Hser, Longshore, & Anglin, 2007).

Using trajectories, transitions, and turning points as conceptual anchors, the life course theory provides analytical tools through which to understand and individual's age-differentiated lifespan. For example, an individual's lifetime health outcomes may be viewed as a complex

system of exposures or risk factors that interact with biological processes impacting the development of disease. Exposures to health-related risk factors are thought to occur early in life and/or at specific periods throughout life. These critical periods or transition events, during which an individual experiences exposure to risk factors, such as loss of employment, increased financial demands, or divorce, may substantially alter the intensity of the exposures and, subsequently, an individual's long-term health trajectory (Anstey, 2008). Likewise, the life-course theory can be applied to the processes which promote and inhibit alcohol-use disorders across the lifespan.

Only a handful of studies have applied this theory to substance-use disorders (Hser et al., 2007). Hser et al. (2007), relying upon results from small-sample longitudinal studies examining substance use, framed the life course trajectory with regard to illicit drug use as involving transition and turning-point events that included onset, acceleration, relapse, and cessation components. Hser et al. (2007) found that earlier age of onset was related to continued use of substance-use problems in later life, and also found that many risk and protective factors associated with onset transition events were also associated with subsequent acceleration transition events that triggered an escalation or increased frequency of use. Moreover, among those individuals who developed a substance-use disorder into adulthood and recovered (e.g., through an aging-out process or through substance use treatment), Hser et al. (2007) found that similar risk and protective factors associated with onset and acceleration transition events were also associated with relapse transition and turning point events. These factors included poverty, comorbid psychiatric disorders, and lack of family and social supports. However, Hser et al.'s (2007) study possessed a restricted age range (i.e., 25 to 36 years old)and did not examine patterns into older adulthood. In short, little remains known about antecedents and patterns of

substance-use disorders among baby boomers in general, and alcohol-use disorders among baby boomers in particular (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011; Choi, DiNitto, & Marti, 2014).

Likewise, an extensive review of the addiction literature suggests that within the alcohol-use disorder research among the baby-boomer cohort, as an age group-specific focus of study, has been largely overlooked (Mowbray & Quinn, 2016; Quinn, 2016[1]). In addition, the majority of alcohol treatment research reports findings in which no directly accessible information is provided that allows for inference with respect to treatment recommendations for baby boomers.

Purpose of the study

The purpose of this study is to examine predictors of alcohol-use disorders among baby boomers across the life course. The primary research question that drives this study asks what factors change and what factors remain stable which predict alcohol-use among middle-aged baby boomers compared to older-adult baby boomers. This is an exploratory study that seeks to contribute to both future research as well as new directions in clinical practice.

Methods

Data and sample

Data is from two time periods of the National Survey of Drug and Health (NSDUH), 2010/2009 and 1998/1997. In order to increase this study's power to detect low frequency events, (e.g., diagnosable alcohol use disorders), data years were combined. The 2010/2009 data is from the combined 2009 and 2010 NSDUH years, and the 1998/1997 data is from the combined 1997 and 1998 NSDUH years. The NSDUH is an annual cross-sectional, large-scale complex random sample survey of the civilian, noninstitutionalized population of the United

States that measures the prevalence and correlates of drug use and health. The survey uses a multistage area probability design stratified by demographic factors to ensure inclusive sampling. Population weights are used to account for nonresponse and geographic distribution of the sample. Data are collected through computer-assisted personal interviewing and audio self-interviewing methods. Prior to 2002, the NSDUH had been named the National Household Survey on Drug Abuse since its inception in 1979.

The total number of respondents that completed the survey in each of the years consisted of 57,313 in 2010, 55,234 in 2009, 25,500 in 1998, and 24,505 in 1997 for combined datasets of 112,547 in 2010/2009 and 50,005 in 1998/1997. In addition, interview response rates consisted of 75% in 2010 and 76% in 2009, and 77% in 1998 and 78% in 1997. The current study's sample, or subpopulation domain, consisted of baby boomers born between the years 1946 and 1960. For the 2010/2009 this subpopulation consisted of 6,213 respondents, and the 1998/1997 subpopulation consisted of 5,880 respondents. As shown in Table 3.1, this subsampling process yielded separate samples of baby boomers aged 50 to 64 years and boomers aged 38 to 52 for the 2010 and 1998 time periods respectively.

Human subjects

Approval from the University of Georgia Institutional Review Board (IRB) was granted prior to obtaining the data. The NSDUH obtained informed consent from each participant prior to collecting data. Participants completed the survey in the privacy of their own home with the assistance of a professional interviewer who visited the home. For the 2010/2009 surveys, participants completed the survey using a laptop provided by the interviewer. For the 1998/1997 surveys, participants completed paper-and-pencil answer sheets. Confidentiality of all responses was achieved by allowing the participant to answer most of the questions in private, with

minimal interaction with the interviewer. Full names were never recorded or associated with participants' answers, and each participant's interview data file was represented by a code number. The duration of the survey was approximately one hour. Participants received cash compensation for completing in the survey; $30 for 2010/2009 and $20 for 1998/1997. For quality control, some participants were contacted following the survey in order to assure that the interview was professionally conducted. In addition, each annually collected dataset underwent a confidentiality review and the data was altered when necessary to limit the risk of disclosure. The datasets were then provided for public-use. To protect the privacy of respondents, all variables that could be used to identify individuals were encrypted or collapsed in the public use file.

Measures

Past-year Alcohol Use Disorder

The response variable is a dichotomous variable indicating the presence or absence of an alcohol-use disorder in the past year. An alcohol-use disorder was defined as either alcohol dependency or alcohol abuse according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV-TR; American Psychiatric Association, 2000). In the 2010 NSDUH dataset, a dependency variable was created and then an abuse variable was created which fit the criterion outlined in the DSM-IV-TR which delineates dependency and abuse as mutually exclusive phenomena. An alcohol-use disorder variable was created for the 1998/1997 data in order to parallel the 2010/2009 mutual exclusivity criterion.

Life course-related variables

An exhaustive search of the data codebooks was conducted in order to build a list of relevant explanatory variables that had been measured in both the 2010/2009 and 1998/1997

time periods. The criteria for relevance of the variables selected were based upon theoretical constructs and empirical findings related to alcohol use across the life course. The result was a list of 26 candidate explanatory, categorical variables that were to undergo variable selection procedures in order to find reduced subsets of variables that most strongly predicted past-year alcohol-use disorders among baby boomers at two stages of the life course. A list of the 26 candidate variables is provided in Table 3.2. One variable, past year driving under the influence (DUI) was only included in the 2010/2009 variable selection due the variable in 1998/1997 possessing a zero-cell count for the cell corresponding to absence of an alcohol-use disorder and the presence of a past-year DUI. The zero-cell count indicates that all baby boomers in 1998/1997 who reported a past-year DUI also possessed an alcohol-use disorder.

Lastly, prior to performing analyses using the datasets described above, variance inflation factors (VIF) were calculated for each variable for both time periods. The VIF's for both time periods were found to be within acceptable limits suggesting an absence of collinearity in the explanatory variables (2010/2009, VIF: [1.02, 2.05]; 1998/1997, VIF: [1.05, 2.58]).

Data analysis

Analyses of sample characteristics and bivariate relationships were performed using SAS software, version 9.4 (SAS Institute, Cary NC). PROC SURVEYFREQ and PROC SURVEYLOGISTIC were used where accurate variance estimation was necessary in order to account for the multi-stage, stratified sampling designs in the NSDUH datasets. Likewise, the DOMAIN statement available in the above SAS procedures was utilized for analyses of the baby-boomer subpopulations in order to ensure that variance estimates incorporated the full sampling design.

For the variable selection/reduction procedure the branch-and-bound algorithm was used in SAS's PROC LOGISTIC procedure, incorporating scaled to unit mean sampling weights in order to obtain accurate maximum likelihood estimation (Heeringa, West, & Berglund, 2010; Lumley & Scott, 2014). The branch-and-bound method generated best subsets of variables according to high-to-low ranked likelihood score statistics (SAS Institute, Cary NC). Based upon on the theoretical and empirical literature, five demographic variables, (ie., gender, race, income, marital status, and education level) were included in all models during the best subsets selection process. Theoretical inclusion of certain theory/evidence-informed variables in all models is a well-established recommendation in the literature (Hosmer & Lemeshow, 2000). In addition, backwards elimination variable selection was conducted using iterations of PROC SURVEYLOGISTIC in order to obtain a subset of variables - after controlling for the demographic variables - that possessed stringent significance levels ($p < .05$). While the literature cautions against the sole use of a stepwise selection technique, when used with other variable reduction methods backward elimination is frequently recommended as a means to obtain a "ballpark" size of the reduced subset of variables which the researcher can expect to find upon using more rigorous methods such as the branch-and-bound algorithm (Kutner, Nachtsheim, Neter, & Li, 2005).

Once a list of "best" models was obtained, the "survey" package available in the statistical software R 3.2.3 was used to calculate information criterion statistics for each model, adjusted for complex survey data (i.e., Akaike Information Criterion (AIC), Schwarz's Bayesian Information Criterion (BIC); Lumley, 2014; Lumley, T. & Scott, A., 2014; R Core Team, 2014). These adjusted criteria (i.e., dAIC, dBIC) have been shown to provide an improved sensitivity to

model discrimination when comparing models developed using complex survey data (Lumley, T. & Scott, A., 2015).

Subsequently, the Wald test was performed in order to test whether a more or less complex model (i.e., more or less variables) was necessary. In general, AIC tends to select models with more variables, while BIC, possessing a higher penalty criterion, tends to select more parsimonious models (Burnham & Anderson, 2004). Similar to a likelihood ratio test (LRT), a Wald test for variable reduction tests the hypothesis that a subset of variables from the full model is significantly different from zero (Hosmer & Lemeshow, 2000). Therefore, a Wald test was conducted to ascertain whether the more complex AIC model or the more parsimonious BIC model was appropriate as a "final" model for each time period, 2010/2009 and 1998/1997.

Once the final models for each time period were obtained using the methods described above, maximum likelihood estimates and standard errors were obtained for each time period's model. In addition, odds ratios and associated 95% confidence intervals were obtained.

Results

Sample characteristics

Table 3.3 displays sample characteristics among baby boomers in the 2010/2009 and 1998/1997 time periods respectively. In each time period, gender, race/ethnicity income, marital status, and education are reported. The baby-boomer sample characteristics were similar between time periods with the exception of income and marital status. A larger percentage of baby boomers in 2010/2009 earned $75,000 or more per year. In addition, while the percentage of married baby boomers decreased between 1998/1997 and 2010/2009, the percentage of divorced baby boomers increased.

"Best" subsets of explanatory variables predicting alcohol-use disorders across time

As described in the Methods section, logistic regression variable selection procedures were conducted in order to obtain a "best" subset of the 26 candidate life course-related explanatory variables that predicted alcohol-use disorders. Initially the backward elimination procedure was conducted in order to obtain a "ballpark" estimate of the number of variables that could be expected for fall near the best model. As described earlier, in order to obtain best models that possessed a combination of theoretical/empirical information related to past alcohol-use disorder research and statistic rigor, 5 demographic variables - gender, race/ethnicity, income, marital status, and education - were included in all candidate models.

Candidate models were obtained that possessed variable subsets ranging from 6 variables (i.e., the 5 demographic variables plus a single variable) to 20 total variables. Each "best" subset possessed the highest likelihood score among all other combinations variables composing that specific subset. This range of best variable subsets was chosen based upon the results of the backward elimination procedure conducted for both the 2010/2009 and 1998/1997 datasets; this procedure arrived at 13 and 10 total variables respectively.

Adjusted information criteria statistics, as described earlier, were obtained for each of the 6 through 20 variable subsets for each time period. For 2010/2009, the best 17-variable subset, *dAIC* = 2215.59, and the backwards elimination 13-variable subset, *dBIC* = 2237.99, were found to be the most predictive of alcohol-use disorders; that is, the 17-variable subset possessed the smallest *dAIC* value and the 13-variable subset possessed the smallest *dBIC* value. For 1998/1997, the 13-variable subset , *dAIC* = 2628.72, and the 8-variable subset, dBIC = 2718.46, were found to possess the smallest information criteria statistics.

Wald tests for variable reduction were performed in order to ascertain whether to keep the larger or smaller variable subset for each time period. For 2010/2009, the Wald test indicated that there was no significant difference between the 17-variable model and the 13-variable model, $F(10,27) = 1.55$, $p = .18$; of which the latter model possessed all the variables in the 17-variable model except for (1) No. of Times Moved in Past 5 Years, (2) Metro/Non-Metro Residence, (3) Past Year Cocaine Use, and (4) Past Year Sedative Use. The nonsignificant results of the Wald test indicate that the 13-variable model possesses approximately the same explanatory capacity as the 17-variable model, and the 13-variable model is more parsimonious. For 1998/1997, the Wald test indicated that there was a significant difference between the 13-variable and 8-variable models, $F(13,103) = 3.42$, $p < .001$. This result indicates that the 13-variable model has more explanatory capacity compared to its 8-variable subset, which contained all the variables in the 13-variable model except (1) Household Size, (2) Employment Status, and (3) Past Year Inhalant Use, (4) Past Year Cocaine Use, (5) Past Year Religious Service Attendance.

Logistic regression results for best models predicting alcohol-use disorders across time

The final models for 2010/2009 (i.e., 13 variables) and 1998/1997 (i.e., 13 variables) are displayed in Table 3.4 and Table 3.5, respectively. In addition, the results of the logistic regression analysis are displayed for each model, with odds ratios and corresponding confidence intervals.

Factors sharing statistical significance among baby boomers across time

Comparing the time periods, 2010/2009 and 1998/1997, women at both times were approximately 50% less likelihood than men to have an alcohol-use disorder in the past year; these odds were statistically significant, *OR* = .49, 95% CI [.33, .72], *OR* = .51, 95% CI [.37,

.71]. Both times periods also shared significant odds indicating that baby boomers were approximately 9 times and 4 times more likely to possess an alcohol-use disorder if they had reported past year treatment for alcohol use versus no past year treatment - in 2010/2009, *OR* = 9.52, 95% CI [3.35, 27.06], and 1998/1997, *OR* = 4.37, 95% CI [2.23, 8.57], respectively. Similarly, baby boomers at both time periods were approximately 9 times and 2 times more likely to possess and alcohol-use disorder if they had reported past year marijuana use versus no past year use - in 2010/2009, *OR* = 3.11, 95% CI [2.12, 4.55], and 1998/1997, *OR* = 1.81, 95% CI [1.06, 3.10], respectively.

Factors not sharing statistical significance among baby boomers across time

Compared to baby boomers earning less than $20,000, those earning income between $20,000 and $49,999 in 2010/2009 were 44% less likely to possess an alcohol-use disorder and those earning between $50,000 - $74,999 were 40% less likely to possess an alcohol-use, *OR* = .56, 95% CI [.36, .89], and *OR* = .60, 95% CI [.36, .99], respectively. In contrast, in 1998/1997 baby boomers' odds of possessing an alcohol-use disorder were not significantly difference from the $20,000 or less income reference group. Similarly, baby boomers in 2010/2009 that were divorced or separated were 1.6 times more likely to possess an alcohol-use disorder compared to their married counterparts, *OR* = 1.61, 95% CI [1.11, 2.32]; no significant differences in odds for baby boomers in 1998/1997 were found for marital status. In addition, in 2010/2009 baby boomers who used alcohol for the first time when they were 18 years or older were about 70% less likely to have an alcohol-use disorder than those boomers who drank alcohol for the first time at 12 years or younger, *OR* = .33, 95% CI [.19, .58]. In 1998/1997, the age of first alcohol use variable was not included in the final model, suggesting that the variable had no substantial impact of the presence or absence of alcohol-use disorders in that time period.

In addition, baby boomers in 2010/2009 who received treatment for any illicit drug were nearly 90% less likely to possess an alcohol-use disorder versus those that received no past-year treatment, *OR* = .13, 95% CI [.03, .69]; past-year illicit drug treatment did not remain in the 1998/1997 model, indicating no difference. In contrast to treatment for illicit drug use, in 2010/2009 baby boomers who reported past-year mental health outpatient treatment were 2.7 times more likely to possess an alcohol-use disorder, *OR* = 2.71, 95% CI [1.30, 5.66]; in 1998/1997 this factor was not predictive of alcohol-use disorders. Likewise, in 2010/2009 past-year unprescribed pain reliever use and hallucinogen use were found to possess significant odds ratios, though these particular drugs were not included in the 1998/1997 model. In 2010/2009 baby boomers who reported past-year pain reliever use were 2.5 times more likely to possess an alcohol-use disorder while, in contrast, boomers who reported past-year hallucinogen use were about 85% less likely to possess an alcohol-use disorder, *OR* = 2.57, 95% CI [1.38, 4.78], and *OR* = .14, 95% CI [.03, .76], respectively. Lastly, in 2010/2009 baby boomers who reported being charged with a DUI in the past year were 10 times more likely to possess an alcohol-use disorder, *OR* = 10.00, 95% CI [2.92, 34.23].

In 1998/1997 two factors (i.e., Cigarettes Past Month, Past Yr. Religious Service Attendance) were found in the final model, and were significant, while these factors did not remain in the final model in 2010/2009. In 1998/1997 baby boomers who reported smoking cigarettes in the past month were 3.3 times more likely to possess an alcohol-use disorder, *OR* = 3.32, 95% CI [2.24, 4.92]. In contrast, 1998/1997 baby boomers who reported attending religious services frequently in the past year were 60% less likely to possess an alcohol-use disorder, *OR* = .41, 95% CI [.24, .69].

Discussion

This study examined patterns of alcohol-use disorders among baby boomers across the life course. Specifically, a set of explanatory variables from 2010/2009 and 1998/1997 were obtained that best predicted alcohol-use disorders among baby boomers. Subsequently, these variables were compared across time periods in order to explore any changes among influential factors that predict the prevalence of alcohol-use disorders among baby boomers.

The primary finding that emerged from this study was that from 1998/1997 to 2010/2009 most baby-boomer risk factors (i.e., concurrent drug use, drinking-related consequences) changed as the baby-boomer cohort approached older adulthood. However, when the current study's results from each time period are examined closer, a second finding emerged.

Research suggests that impulsive sensation-seeking behaviors are related to illicit drug use (Patkar et al., 2004). In the current study, rather than experiencing cessation of risk factors, baby-boomer risk factors were replaced by other behaviors of an impulsive nature. These current findings suggest that an underlying impulsivity characteristic among baby boomers may have remained stable across time. For example, between 1998/1997 and 2010/2009 cocaine and inhalant use, as well as cigarette smoking, were replaced by similar behavior consisting of unprescribed pain reliever use and an increase in marijuana use as predictors of alcohol-use disorders. In addition, being charged with a DUI was highly predictive of the presence of an alcohol-use disorder in 2010/2009. Therefore, the above findings suggest that across time alcohol-use disorders among baby boomers may be largely affected by impulsive behaviors manifested as concurrent illicit drug use and sensation-seeking actions.

In addition, protective factors (i.e., mental healthcare, marital status, income) were found to be increasingly important to baby boomers possessing alcohol-use disorders as they enter

older adulthood. For example, baby boomers receiving mental health treatment were nearly 3 times as likely as boomers in 1998/1997 to have an alcohol-use disorder. Likewise, being divorced or separated for a baby boomer in 2010/2009 introduced a more substantial impact to their odds of possessing an alcohol-use disorder compared to boomers in 1998/1997. In addition, higher levels of income appear to be increasingly salient for aging boomers as well. In contrast, the results suggest that across time religion may be a less important factor impacting baby boomers risk of alcohol-use disorders in older adulthood. In 1998/1997 frequent religious attendance was found to substantially decrease the likelihood of alcohol-use disorders, while in 2010/2009 religious attendance was not found to be an important predictive factor.

In summary, this study's findings suggest that factors characteristic of impulsivity tend to be predictors of alcohol-use disorders among baby boomers across the life course. In addition, protective factors such as marriage and income have become increasingly important to baby boomers with alcohol-use disorders over time.

Practice Implications and Future Research

This study's findings possess several important practice implications for treating baby boomers struggling with an alcohol-use disorder. As suggested above, while the risk factors for alcohol-use disorders among baby boomers changed, an underlying impulsivity characteristic possessed by these risk factors remained the same over time. Moreover, these findings suggest that diagnostic indicators for a baby boomer to possess an alcohol-use disorder may include being a divorced man who endorses the concurrent use of several illicit drugs, in particular unprescribed pain relievers and marijuana. In addition, recent alcohol treatment and mental health treatment are suggested by this study's findings to be indicators as well. However, these recommendations should be taken tentatively since the analyses used in this study indicate that

most or all of these factors combined increase the likelihood of alcohol-use disorders among baby boomers; that is, the whole may be greater than the sum of the parts.

The implications of the current findings suggest that a primary treatment choice for baby boomers with alcohol-use disorders, or at-risk for problem drinking, is an intervention, such as cognitive-behavior or motivational-enhancement therapies, which emphasizes strengthening impulse control as well as encouraging the development of social bonds (Moyer, Finney, Swearingen, & Vergun, 2002).

Likewise, several recommendations can be made for future research. The current study is one of only a handful of studies known to exist that examines predictors of alcohol-use disorders among baby boomers exclusively across the life course. Further study designs of this kind, focusing specifically on the baby-boomer cohort, are needed. However, in order to achieve this recommendation, researchers will need to change the traditional categories in which ages are reported in publically-available large sample survey data. That is, few large sample surveys report age categories that allow for secondary data analysis of particular birth cohorts, especially the baby-boomer cohort. A new demarcation criterion for reported age categories is necessary to separate baby boomers and older and younger adults which fall outside the boomer birth range. In addition, longitudinal research is needed in which the age range of baby boomers is clearly demarcated. In this way plausible causative factors for alcohol-use disorders in particular, and substance-use disorders in general, may be examined.

Limitations

This study possessed several limitations. First, the datasets corresponding to 2010/2009 and 1998/1997 are cross-sectional in design, combining two years each, and consisting of different participants for each respective year. Conclusions such as those that might be drawn

from performing a trend analysis of a longitudinal dataset - which follows the same participants across time – cannot be obtained using this study's data; therefore, directional causation is difficult to establish in the current study. Third, this study is exploratory in nature and is limited by the range of variables that were chosen for measure, particularly the range of life course-related variables available in the NSDUH datasets. As a result, the so-called "best" models that were obtained for each time period can only be considered the best among the variables that were available in the NSDUH. Furthermore, a time effect may also have interacted with measures of baby boomers across the 1998/1997 and 2010/2009 time periods (e.g., economy changes).

In addition, inferences regarding the significance of the regression models for each time period (i.e., 2010/2009 and 1998/1997) are subject to the usual problems encountered in regression modeling. First, the data are obtained from self-reports of alcohol use, and the accuracy of the data depend on the participants' truthfulness and memory; some underreporting and/or overreporting may take place. Second, the target population for the NSDUH surveys each year is defined as a noninstitutionalized civilian population of the United States. This excludes a small proportion of the total population such as active-duty military and individuals living in institutions such as hospitals, prisons, nursing homes, and treatment centers. As a result, statistical estimates may be slightly inaccurate. Finally, some inconsistency may exist among variables within each dataset due to the statistical methods used to impute missing values.

Conclusion

In conclusion, this study examined patterns of alcohol-use disorders among baby boomers across the life course. The main finding suggests that, while many predictors of alcohol-use disorders change as baby boomers transitioned from middle-age to older adulthood, an underlying characteristic among the explanatory factors remains stable across time,

impulsivity. As this unprecedented, large birth cohort enters older adulthood these findings contribute to both further directions in research as well as implications for clinical practice.

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Table 3.1. *The baby-boomer cohort age range and subpopulation size by time period*

Birth Year	Age 2010/2009	Age in 1998/1997
1946	64	52
1960	50	38
Subpopulation Size (*N*)	6,213	5,880

Table 3.2. *Candidate explanatory variables by category*

Demographics	Health/Mental Health	Drug Events	Drug Use (Past Year)
Gender	Overall Health	Age 1st Used Alcohol	Pain Relievers
Race	Past Yr. Mental Health Outpatient Treatment	Past Yr. Treatment for Alcohol Use	Cocaine
Past Yr. Income [a]	Cigarettes Past Month	Past Yr. Treatment for Illicit Drug Use	Hallucinogens
Past Yr. Marital Status		Past Yr. DUI (2010 only)	Inhalants
Education Level			Marijuana
Past Yr. Household Size			Sedatives
No. of Times Moved in Past 5 Years			Stimulants
Metro/Non-Metro Residence			Tranquilizers
Past Yr. Employment Status			Heroin
Past Yr. Religious Service Attendance			

[a] Measured as total household income per year

Table 3.3. *Sample characteristics among baby boomers in 2010/2009 and 1998/1997*

	2010/2009 (*N* = 6,213) %	1998/1997 (*N* = 5,880) % or *M (SD)*
Age (years)	50 - 64[a]	43.94 (4.56)
Gender		
Male	50.35	50.31
Female	49.64	49.68
Race/ethnicity		
White/Non-Hispanic	77.46	78.22
African American	9.75	10.22
Hispanic	8.25	7.82
Non-Hispanic Asian	2.81	-
Other	1.70	3.72
Income[b]		
Less than $20,000	11.93	18.18
$20,000 - $49,999	28.23	32.10
$50,000 - $74,999	19.03	23.19
$75,000 or More	40.80	26.51
Marital Status		
Married	66.41	74.07
Widowed	4.42	1.32
Divorced or Separated	21.05	14.94
Never Been Married	8.10	9.65
Education		
Less than high school	10.68	10.66
High school graduate	30.33	31.13
Some college	25.68	26.24
College graduate	33.29	31.96

All Ns in column heading are expressed as unweighted values. All table values are weighted column percentages.
a After 1998 the publicly available NSDUH datasets only provide age range categories with no additional statistics reported
[b] Measured as total household income per year

Table 3.4. *Best logistic regression model predicting alcohol-use disorder versus no disorder among baby boomers in 2010/2009: Odds ratios (OR) and 95% confidence intervals (CI)*

2010/2009 Variables	OR	95% CI	2010/2009 Variables	OR	95% CI
Gender			Education		
Female (Male)	.49***	.33, .72	High school graduate (Less than high school)	.78	.50, 1.23
Race/ethnicity			Some college (Less than high school)	1.09	.71, 1.67
African American (White/Non-Hispanic)	1.40	.89, 2.20	College graduate (Less than high school)	.78	.47, 1.30
Hispanic (White/Non-Hispanic)	.96	.48, 1.89	Age 1st Used Alcohol		
Non-Hispanic Asian (White/Non-Hispanic)	.78	.25, 2.46	13-17 Years Old (12 Years or Younger)	.73	.46, 1.16
Other (White/Non-Hispanic)	1.25	.63, 2.48	18 Years or Older (12 Years or Younger)	.33***	.19, .58
Income [a]			Past Yr. Treatment for Alcohol Use (No Treatment)	9.52***	3.35, 27.06
$20,000 - $49,999 (Less than $20,000)	.56*	.36, .89	Past Yr. Treatment for Illicit Drug Use (No Treatment)	.13*	.03, .69
$50,000 - $74,999 (Less than $20,000)	.60*	.36, .99	Past Yr. Charged with Driving Under the Influence (Not Charged)	10.00***	2.92, 34.23
$75,000 or More (Less than $20,000)	.67	.40, 1.14	Past Yr. Pain Reliever Use (No Use)	2.57**	1.38, 4.78
Marital Status			Past Yr. Marijuana Use (No Use)	3.11***	2.12, 4.55
Widowed (Married)	1.15	.52, 2.51	Past Yr. Hallucinogens Use (No Use)	.14*	.03, .76
Divorced or Separated (Married)	1.61*	1.11, 2.32	Past Yr. Mental Health Outpatient Treatment (No Treatment)	2.71**	1.30, 5.66
Never Been Married (Married)	1.15	.70, 1.90			

N = 6,213; * $p < .05$; ** $p < .01$; *** $p < .001$ [a] Measured as total household income per year

Table 3.5. *Best logistic regression model predicting alcohol-use disorder versus no disorder among baby boomers in 1998/1997: Odds ratios (OR) and 95% confidence intervals (CI)*

1998/1997 Variables	OR	95% CI	1998/1997 Variables	OR	95% CI
Gender			Past Yr. Treatment for Alcohol Use (No Treatment)	4.37***	2.23, 8.57
Female (Male)	.51***	.37, .71	Past Yr. Cocaine Use (No Use)	1.72	.85, 3.51
Race/ethnicity			Past Yr. Marijuana Use (No Use)	1.81*	1.06, 3.10
African American (White/Non-Hispanic)	1.14	.78, 1.69	Past Yr. Inhalant Use (No Use)	2.73	.28, 27.12
Hispanic (White/Non-Hispanic)	1.15	.68, 1.96	Smoked Cigarettes in Past Month (No Cigarettes)	3.32***	2.24, 4.92
Other (White/Non-Hispanic)	1.81	.88, 3.73	Household Size		
Income [a]			Two people (One person)	1.08	.57, 2.06
$20,000 - $49,999 (Less than $20,000)	.67	.40, 1.12	Three people (One person)	.98	.49, 1.94
$50,000 - $74,999 (Less than $20,000)	.67	.35, 1.31	Four people (One person)	.66	.32, 1.36
$75,000 or More (Less than $20,000)	.82	.39, 1.72	Five people (One person)	.75	.33, 1.69
Marital Status			Six or more people (One person)	.80	.35, 1.80
Widowed (Married)	1.80	.70, 4.68	Employment Status		
Divorced or Separated (Married)	1.38	.87, 2.17	Employed Part Time (Employed Full Time)	1.50†	.96, 2.33
Never Been Married (Married)	1.23	.72, 2.10	Unemployed (Employed Full Time)	1.23	.64, 2.37
Education			Other, not in labor force (Employed Full Time)	.70	.39, 1.24
High school graduate (Less than high school)	.89	.54, 1.45	Religious Service Attendance, Past Yr.		
Some college (Less than high school)	.54†	.28, 1.02	Rarely Attended (Not Religious/Did not Attend)	.86	.57, 1.31
College graduate (Less than high school)	.84	.47, 1.52	Infrequently Attended (Not Religious/Did not Attend)	.66†	.40, 1.07
			Frequently Attended (Not Religious/Did not Attend)	.41***	.24, .69

N = 5,880; †$p < .10$; *$p < .05$; ** $p < .01$;*** $p < .001$;[a] Measured as total household income per year

CHAPTER 4

PREDICTORS OF ALCOHOL-USE DISORDERS AMONG BABY BOOMERS DENYING TREATMENT NEED ACROSS THE LIFE COURSE

As the unprecedentedly large birth cohort known as the "baby boomers" begin to enter the stages of older adulthood, novel findings regarding alcohol-use disorders among this population have begun to emerge. Defined as those individuals born between 1946 and 1964, baby boomers are expected to exhibit changes in alcohol usage and treatment need patterns compared to previous older-adult cohorts. For example, from data obtained between 2008 and 2012 baby boomers have been found to possess higher rates of binge drinking, lower reported rates of alcohol abstention and, in general, higher rates of alcohol-use disorders compared to their older counterparts (Choi, DiNitto, & Marti, 2015). Likewise, research suggests that baby boomers tend to possess increased alcohol-use treatment admission rates compared to previous older adults (Duncan, Nicholson, White, Bradley, & Bonaguro, 2010). However, research also indicates that unmet treatment need may also occur (Choi et al., 2015). The literature suggests that unmet alcohol treatment need among baby boomers may be partially due to a lack of problem recognition or failing to acknowledge a problem exists. In addition, recent findings suggest that a life course theory of problem drinking, as opposed to episodic or "point-in-time" perspectives, may be an effective framework from which to develop evidence-based treatments for aging adults, baby boomers in particular. Therefore, the current study seeks to explore factors that predict alcohol-use disorders among baby boomers who deny alcohol treatment need across the life course.

Characteristics of baby boomer treatment need in the coming decades

In 2010, the year prior to the first baby-boomers turning 65, the number of U.S. adults 65 years or older was 40.2 million (U.S Census Bureau, 2011). In contrast, in 2029 when the last of the baby-boomer cohort turns 65 the number of adults 65 year or older is projected to reach approximately 71.4 million, nearly doubling in 19-year period. During the same period, the total U.S. population will increase by approximately 17%, while the population of individuals under 65 years of age will increase by only 6% (U.S. Census Bureau, 2012). In order to better visualize this phenomena, the population pyramid plots in Figure 4.1 provide graphical displays of baby-boomer population growth at four time periods, 1946, 1966, 2010, and 2029. Typically, as the name suggests, a cross-sectional population pyramid plot is expected to be wider at the base and taper to a point as the population age increases at a specific point in time. However, as indicated by the pyramid plots in Figure 4.1 the trend suggests that the U.S. will no longer possess the expected pyramid-shaped population distribution for many decades to come.

Until recently alcohol use was thought to decline with age. That is, a higher rate of "aging out" of alcohol use was consistently found among older adults beginning at age 60 and accelerating at 70 years (Memmott, 2003; Simoni-Wastila & Yang, 2006). For example, older adults classified as "young-old" (i.e., 65-74 years) had been found to use alcohol more frequently than those classified as "oldest-old" (i.e., 85+ years). However, researchers and policy makers now realize that aging baby boomers are expected to misuse alcohol at higher rates than research has suggested for older adults in the past (Blow & Barry, 2012). Moreover, early in the 21st century analysts projected that the number of adults age 60 or older requiring substance use treatment would increase from 688,000 in 2000/2001 to 2.3 million in 2020, an increase of 134% or about 3 times the treatment need (Gfroerer, Penne, Pemberton, & Folsom, 2003). This trend

is expected to continue until 2050; the last of the baby-boomer cohort reaches age 60 in 2024 and age 65 in 2029. Furthermore, a growing evidence base suggests that baby-boomer treatment need will increase due to the large boomer population as well as to an increased frequency of misuse among this population in particular (Babatunde, Outlaw, Forbes, & Gay, 2014).

In addition to increased projected increased treatment need, studies suggest that baby boomers may be prone to experience significant barriers to alcohol-use disorder treatment as they age (Babatunde et al., 2014; Choi, DiNitto, & Marti, 2014). These barriers may include: (a) misdiagnosis (i.e., mistaking alcohol use as typical signs of aging, for instance, confusion, depression, memory loss, hostility, an unsteady gait, and change in personal appearance, (b) underdiagnosis, (c) denial of treatment need and/or discomfort related to discussing problem drinking behaviors, (d) lack of family and social support, and (e) lack of financial resources (Briggs, Magnus, Lassiter, Patterson, & Smith, 2011; Sorocco & Ferrell, 2006). Barriers to treatment facing baby boomers may also be affected by (a) cultural background and/or regional differences, (b) life-time drinking behaviors such as age of drinking onset, and (c) risk factors and life events that may impact the onset-relapse-recovery cycle of alcohol-use behaviors (e.g., concurrent illicit or prescription drug abuse, social isolation; St John, Snow, & Tyas, 2010).

Perceptions of alcohol treatment need among baby boomers

In order to overcome barriers to treatment, baby boomers may require specifically tailored interventions in order to ensure that effective alcohol treatment is received. A small number of studies suggest that the degree to which older-adult baby boomers perceive alcohol treatment need may impact the types of treatments received and the extent that treatment is successful. For example, research suggests that individuals who recognize that they possess problem drinking behaviors may be more likely to accept longer-term, tailored treatments versus

brief, nonspecific generalized interventions (i.e., attending Alcoholic Anonymous meetings versus 28-day inpatient detoxification and subsequent evidence-based treatment; Choi et al., 2015; Duncan et al., 2010; Cooper, 2012; Simoni-Wastila & Yang, 2012). In contrast, evidence suggests that individuals who lack problem recognition may be more likely to enter brief, generalized treatment but have high attrition rates and fail to make lasting changes (Blume, Schmaling, Marlatt, 2006; Rapp et al., 2007; Stevens, Verdejo-García,, Roeyers, Goudriaan, & Vanderplasschen, 2015). In addition, research suggests that denial of alcohol treatment need is closely related to experiencing increased confidence with regard to reducing alcohol-use through treatment. Likewise, increased problem recognition has been found to relate to low confidence levels regarding successful treatment (Rapp et al., 2007). In other words, those individuals who perceive an alcohol problem exists, and realize treatment is needed, may feel overwhelmed by the difficulties ahead of them in addressing the problem. Similarly, individuals who deny treatment need may attend treatment but minimally benefit from the interventions. This lack of treatment benefit could be from failure to participate in treatment and/or receiving generalized interventions that only minimally address the problem. Therefore, effective interventions tailored for older-adult baby boomers may need to possess components which initially address barriers to treatment such as denial of treatment need.

Baby-boomer alcohol treatment guided by the life course theory

In order to understand the unique alcohol treatment needs of baby boomers as they enter into older-adulthood, research may benefit from examining factors related to alcohol-use disorders across time, rather than at a single time period. The life course theory may be a strong candidate for applications in alcohol treatment research.

The life course theory of human development emerged as an influential theory of aging in the 1970s (Elder, 1975). The life course theory provides a framework for viewing the temporal dimensions of aging. These dimensions include (a) chronological age as an index in which to measure the aging process, (b) social age, such as marriage, family, and retirement, as a way to understand the influence of norms and social roles in the aging process, and (c) historical age, or the particular location in history in which a person and his or her cohort lived (Elder, 1985; 1994).

The life course theory attempts to explain an individual's lifespan as a set of interwoven trajectories or pathways that are subject to alteration contingent upon immediate conditions, future options, and short-term transitions that emerge throughout life and which are rooted in an individual's cultural and social traditions (Elder, 1994). Concepts such as trajectories, transitions, and turning points provide an understanding of the complex web of the human life course. Specifically, trajectories refer to long-term patterns of behavior composed of sequences of embedded transitions. Transitions are used to describe shorter-term spans of time during which significant events occur, (e.g., leaving school, establishing a job, becoming pregnant, or committing a crime), which may trigger both short- and long-term consequences across the life course. Turning points are those events that are triggered by the interplay of trajectories and transitions, which may result in positive or negative adaptations affecting an individual's life moving forward. Moreover, how an individual manages transitions and turning points is thought to influence stress-response patterns, subsequently impacting the emergence of health-promoting and/or health-inhibiting behaviors (Hser et al., 2007).

Purpose of the study

In summary, the literature suggests that among alcohol-use intervention research the baby-boomer cohort, as an age group-specific focus of study, has been largely overlooked; the majority of alcohol treatment research lacks findings related to baby boomers in particular. Among the small number of studies examining alcohol-use treatment among older-adult baby boomers, the findings and recommendations suggest that denial of treatment need may be a substantial barrier to effective alcohol treatment. Likewise, in order to understand patterns of alcohol use and the unique treatment needs of the aging baby boomer cohort, a life course theory may be a viable theoretical framework through which to view these changes across time.

Therefore, the current study seeks to explore factors that predict alcohol-use disorders among baby boomers who deny alcohol treatment need across the life course. In particular, among baby boomers who have denied alcohol treatment need over time, this study seeks to understand how factors predicting alcohol-use disorders have changed as baby boomers transitioned from middle-age to older adulthood (i.e., 1998 and 2010, respectively). This is an exploratory study that seeks to contribute to clinical practice and future research.

Methods

Data and sample

Data is from two time periods of the National Survey of Drug and Health (NSDUH), 2010/2009 and 1998/1997. In order to increase this study's power to detect low frequency events, (e.g., diagnosable alcohol use disorders), data years were combined. The 2010/2009 data is from the combined 2009 and 2010 NSDUH years, and the 1998/1997 data is from the combined 1997 and 1998 NSDUH years. The NSDUH is an annual cross-sectional, large-scale complex random sample survey of the civilian, noninstitutionalized population of the United

States that measures the prevalence and correlates of drug use and health. The survey uses a multistage area probability design stratified by demographic factors to ensure inclusive sampling. Population weights are used to account for nonresponse and geographic distribution of the sample. Data are collected through computer-assisted personal interviewing and audio self-interviewing methods. Prior to 2002, the NSDUH had been named the National Household Survey on Drug Abuse since its inception in 1979.

The total number of respondents that completed the survey in each of the years consisted of 57,313 in 2010, 55,234 in 2009, 25,500 in 1998, and 24,505 in 1997 for combined datasets of 112,547 in 2010/2009 and 50,005 in 1998/1997. In addition, interview response rates consisted of 75% in 2010 and 76% in 2009, and 77% in 1998 and 78% in 1997. The current study's sample, or subpopulation domain, consisted of baby boomers born between the years 1946 and 1960. For the 2010/2009 this subpopulation consisted of 6,213 respondents, and the 1998/1997 subpopulation consisted of 5,880 respondents. As shown in Table 1, this subsampling process yielded separate samples of baby boomers aged 50 to 64 years and boomers aged 38 to 52 for the 2010 and 1998 time periods respectively.

Human subjects

Approval from the University of Georgia Institutional Review Board (IRB) was granted prior to obtaining the data. The NSDUH obtained informed consent from each participant prior to collecting data. Participants completed the survey in the privacy of their own home with the assistance of a professional interviewer who visited the home. For the 2010/2009 surveys, participants completed the survey using a laptop provided by the interviewer. For the 1998/1997 surveys, participants completed paper-and-pencil answer sheets. Confidentiality of all responses was achieved by allowing the participant to answer most of the questions in private, with

minimal interaction with the interviewer. Full names were never recorded or associated with participants' answers, and each participant's interview data file was represented by a code number. The duration of the survey was approximately one hour. Participants received cash compensation for completing in the survey; $30 for 2010/2009 and $20 for 1998/1997. For quality control, some participants were contacted following the survey in order to assure that the interview was professionally conducted. In addition, each annually collected dataset underwent a confidentiality review and the data was altered when necessary to limit the risk of disclosure. The datasets were then provided for public-use. To protect the privacy of respondents, all variables that could be used to identify individuals were encrypted or collapsed in the public use file.

Measures

Denial of alcohol treatment need

Initially, subpopulation domains were obtained from 2010/2009 and 1998/1997 which consisted of baby boomers who denied alcohol treatment need. Specifically, this subset of baby boomers corresponded to those who answered "no" to the question, "During the past 12 months did you need treatment or counseling for your use of alcohol?" This procedure resulted in subpopulation domains of 6,027 and 5,711 for 2010/2009 and 1998/1997 respectively

Past-year Alcohol Use Disorder

The response variable is a dichotomous variable indicating the presence or absence of an alcohol-use disorder in the past year. An alcohol-use disorder was defined as either alcohol dependency or alcohol abuse according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV-TR; American Psychiatric Association, 2000). In the 2010 NSDUH dataset, a dependency variable was created and then an abuse variable was created

which fit the criterion outlined in the DSM-IV-TR which delineates dependency and abuse as mutually exclusive phenomena. An alcohol-use disorder variable was created for the 1998/1997 data in order to parallel the 2010/2009 mutual exclusivity criterion.

Explanatory variables

Explanatory variables for each time period, 2010/2009 and 1998/1997, were obtained through a variable selection process, beginning with a set of 26 candidate variables. Initially, an exhaustive search of the NSDUH data codebooks was conducted in order to build a list of relevant explanatory variables that had been measured in both the 2010/2009 and 1998/1997 time periods, respectively. The criteria for relevance of the variables selected were based upon theoretical constructs and empirical findings related to alcohol use among baby boomers across the life course (Quinn, 2016a [1]). The result was a list of 26 categorical variables, displayed in Table 4.2, which underwent variable selection procedures in order to obtain reduced subsets of variables that most strongly predicted past-year alcohol-use disorders among baby boomers at two time periods (i.e., 2010/2009 and 1998/1997).

Data analysis

For the current study, all analyses were performed using SAS software, version 9.4 (SAS Institute, Cary NC). Analyses of sample characteristics and bivariate relationships were performed using PROC SURVEYFREQ and logistic regression analyses were performed using PROC SURVEYLOGISTIC in order to obtain accurate variance estimation due to the nature of the multi-stage, stratified sampling designs in the NSDUH datasets. Likewise, the DOMAIN statement available in the above SAS procedures was utilized for analyses of the baby-boomer subpopulations in order to ensure that variance estimates incorporated the full sampling design.

For the variable selection/reduction procedure the branch-and-bound algorithm was used in SAS's PROC LOGISTIC procedure, incorporating scaled to unit mean sampling weights in order to obtain accurate maximum likelihood estimation (Heeringa, West, & Berglund, 2010; Lumley & Scott, 2014). The branch-and-bound method generated best subsets of variables according to high-to-low ranked likelihood score statistics (SAS Institute, Cary NC). Based upon on the theoretical and empirical literature, five demographic variables, (ie., gender, race, income, marital status, and education level) were included in all models during the best subsets selection process. Theoretical inclusion of certain theory/evidence-informed variables in all models is a well-established recommendation in the literature (Hosmer & Lemeshow, 2000).

Once a list of "best" models was obtained, the "survey" package available in the statistical software R 3.2.3 was used to calculate information criterion statistics for each model, adjusted for complex survey data (i.e., Akaike Information Criterion (AIC), Schwarz's Bayesian Information Criterion (BIC); Lumley, 2014; Lumley, T. & Scott, A., 2014; R Core Team, 2014). These adjusted criteria (i.e., Daic, Dbic) have been shown to provide an improved sensitivity to model discrimination when comparing models developed using complex survey data (Lumley, T. & Scott, A., 2015).

Subsequently, the Wald test was performed in order to test whether a more or less complex model (i.e., more or less variables) was necessary. In general, AIC tends to select models with more variables, while BIC, possessing a higher penalty criterion, tends to select more parsimonious models (Burnham & Anderson, 2004). A Wald test for variable reduction tests the hypothesis that a subset of variables from the full model is significantly different from zero (Hosmer & Lemeshow, 2000). Therefore, a Wald test was conducted in order to arrive at final predictive models for each time period, 2010/2009 and 1998/1997.

Once the final models for each time period were obtained, using the methods described above, odds ratios and associated 95% confidence intervals were calculated.

Results

Sample characteristics

Table 4.3 displays sample characteristics among baby boomers in the 2010/2009 and 1998/1997 time periods respectively. In each time period, gender, race/ethnicity income, marital status, and education are reported. The baby-boomer sample characteristics were similar between time periods with the exception of income and marital status. A larger percentage of baby boomers in 2010/2009 earned $75,000 or more per year, while a smaller percentage earned less than $20,000. In addition, while the percentage of married baby boomers decreased between 1998/1997 and 2010/2009, the percentage of divorced baby boomers increased.

"Best" subsets of explanatory variables predicting lack of problem recognition across time

As described in the Methods section, logistic regression variable selection procedures were conducted in order to obtain a "best" subset of the 26 candidate life course-related explanatory variables that predicted alcohol-use disorders among baby boomers denying treatment need.

Candidate models were obtaining possessing variable subsets ranging from 6 variables (i.e., the 5 demographic variables plus a single variable) to 25 total variables. Each "best" subset possessed the highest likelihood score among all other combinations variables composing that specific subset. This procedure arrived at 16 and 10 total variables respectively.

Adjusted information criteria statistics, as described earlier, were obtained for each of the 6 through 20 variable subsets for each time period. For 2010/2009, the best 16-variable subset, *Daic* = 2166.68, and the best 10-variable subset, *Dbic* = 2347.11, were found to be the most

predictive of lack of alcohol problem recognition. For 1998/1997, the 15-variable subset , *Daic* = 2588.28, and the 8-variable subset, *Dbic* = 2670.69, were found to possess the smallest information criteria statistics.

Wald tests for variable reduction were performed in order to ascertain whether to keep the larger or smaller variable subset for each time period. For 2010/2009, the Wald test indicated that there was a significant difference between the 15-variable model and the 10-variable model, $F(12,28) = 3.06$, $p = .007$. The significant results of the Wald test indicate that the 16-variable model possesses improved explanatory capacity over the 10-variable model. For 1998/1997, the Wald test indicated that there was a significant difference between the 15-variable and 8-variable models, $F(18,98) = 3.12$, $p < .001$. This result indicates that the 15-variable model has more explanatory capacity compared to its 8-variable subset.

Logistic regression results for best models predicting alcohol-use disorders across time

The final models for 2010/2009 (i.e., 16 variables) and 1998/1997 (i.e., 15 variables) are displayed in Table 4.4 and Table 4.5, respectively. The results of the logistic regression analysis are displayed for each model, with odds ratios and corresponding confidence intervals.

Factors sharing statistical significance among baby boomers across time

Comparing the time periods, 2010/2009 and 1998/1997, women at both times were approximately 50% less likelihood than men to have an alcohol-use disorder in the past year; these odds were statistically significant, *OR* = .49, 95% CI [.33, .74], *OR* = .55, 95% CI [.39, .76]. In addition, both time periods shared significant odds indicating that baby boomers who earned between $20,000 and $49,999 per year were approximately 40% less likely to possess an alcohol-use disorder compared to those earning less than $20,000, *OR* = .55, 95% CI [.34, .91], *OR* = .60, 95% CI [.36, .99]. Both times periods also shared significant odds indicating that baby

boomers were approximately 8 times and 3 times more likely to possess an alcohol-use disorder if they had reported past year treatment for alcohol use versus no past year treatment – in 2010/2009, *OR* = 8.30, 95% CI [2.89, 23.78], and 1998/1997, *OR* = 2.69, 95% CI [1.40, 5.18], respectively. Similarly, baby boomers at both time periods were approximately 3 times and 2 times more likely to possess an alcohol-use disorder if they had reported past year marijuana use versus no past year use – in 2010/2009, *OR* = 2.94, 95% CI [1.94, 4.47], and 1998/1997, *OR* = 1.70, 95% CI [1.01, 2.89], respectively.

Factors not sharing statistical significance among baby boomers across time

Baby boomers in 2010/2009 that were divorced or separated were 1.7 times more likely to possess an alcohol-use disorder compared to their married counterparts, *OR* = 1.74, 95% CI [1.18, 2.60]; no significant differences in odds for baby boomers in 1998/1997 were found for marital status. In addition, in 2010/2009 baby boomers who used alcohol for the first time when they were 18 years or older were approximately 60% less likely to have an alcohol-use disorder than those boomers who drank alcohol for the first time at 12 years or younger, *OR* = .37, 95% CI [.21, .67]. In 1998/1997, no significant differences in odds for baby boomers were found for first-time alcohol use.

In addition, baby boomers in 2010/2009 who received treatment for any illicit drug were nearly 90% less likely to possess an alcohol-use disorder versus those that received no past-year treatment, *OR* = .12, 95% CI [.02, .78]; past-year illicit drug treatment did not remain in the 1998/1997 model, suggesting that in 1998/1997 illicit drug treatment was not a salient factor contributing to the overall predictive model. In contrast to treatment for illicit drug use, in 2010/2009 baby boomers who reported past-year mental health outpatient treatment were 2.5 times more likely to possess an alcohol-use disorder, *OR* = 2.56, 95% CI [1.13, 5.79]; in

1998/1997 this factor did not remain in the predictive model. Likewise, in 2010/2009 past-year unprescribed pain reliever use and hallucinogen use were found to possess significant odds ratios compared to the 1998/1997 model. In 2010/2009 baby boomers who reported past-year pain reliever use were 2 times more likely to possess an alcohol-use disorder while, in contrast, 2010/2009 boomers who reported past-year hallucinogen use were nearly 95% less likely to possess an alcohol-use disorder, *OR* = 2.10, 95% CI [1.11, 3.99], and *OR* = .06, 95% CI [.01, .83], respectively. In addition, baby boomers in 2010/2009 who reported moving residences six or more times in the past 5 years were almost 3.5 times more likely to possess an alcohol-use disorder compared to boomer who reported not moving in the past 5 years, *OR* = 3.46, 95% CI [1.18, 10.18]. Lastly, in 2010/2009 baby boomers who reported being charged with a DUI in the past year were 6 times more likely to possess an alcohol-use disorder, *OR* = 6.02, 95% CI [1.67, 21.69].

In 1998/1997 baby boomers who reported past month use of cigarettes were over 3 times more likely to possess an alcohol-use disorder, *OR* = 3.33, 95% CI [2.32, 4.78], while this factor did not contribute to the predict capacity of the 2010/2009 model. In contrast, 1998/1997 baby boomers who reported attending religious services frequently in the past year were over 60% less likely to possess an alcohol-use disorder compared to boomers who did not report attending any services, *OR* = .37, 95% CI [.23, .60].

Discussion

This study examined predictors of alcohol-use disorders among exclusive samples of baby boomers who denied alcohol treatment need at two time periods. Best predictive sets of variables were found that predicted alcohol-use disorders for 2010/2009 and 1998/1997 respectively.

The primary finding that emerged from this study was that among baby boomers who deny alcohol treatment need, those who received alcohol treatment in the past year are significantly more likely to possess an alcohol use disorder, with the magnitude of these odds increasing four-fold between 1998/1997 and 2010/2009.

At face value, these findings were surprising. That is, past-year alcohol treatment, which is typically expected to encourage acknowledgement of a drinking problem, were found to have the opposite effect among baby boomers who denied alcohol treatment need but possessed an alcohol-use disorder. From a stages-of-change perspective (Prochaska & Norcross, 2001) the current findings suggest that past-year alcohol treatment – expected to motivate a problem drinker's transition from a precontemplative to a contemplative stage of change – instead predicted an increased likelihood of possessing an alcohol-use disorder among baby boomers who denied treatment need. In other words, the findings suggest that treatment failed to impact the prevalence of alcohol-use disorders among baby boomers who self-reported not needing treatment.

However, research evidence supports the above finding. Evidence suggests that intrapersonal consequences related to alcohol use are more salient than interpersonal or external consequences, such as generalized treatment, in changing alcohol use behavior (Blume, Schmaling, Marlatt, 2006). Moreover, Rapp et al. (2007) reported an inverse relationship between perceived treatment need and reluctance to attend treatment. (i.e., the more evident that a substance abuse problem existed, the less confident substance abusers were toward entering and receiving treatment. In other words, studies suggest that the more an alcohol problem is perceived to exist, the less a person is motivated to attend specialized treatment. Similarly, the findings from the current study indicate that problem-drinking baby boomers who denied need

for alcohol treatment tended to receive short-term, generalized treatment such as an overnight stay at a hospital. At both time periods (i.e., 1998/1997 and 2010/2009) only 20% of those baby boomers who possessed an alcohol-use disorder and also received alcohol treatment in the past year reported receiving specialty care (i.e., inpatient or outpatient treatment at an alcohol rehabilitation center). This latter statistic may explain the above findings: specialty alcohol treatment is more likely to possess evidence-based components that may exert an effect upon problem drinkers who deny treatment need. In contrast, nonspecific, generalized treatment may not exert such an impact.

Practice Implications and Future Research

This study's findings possess several important practice implications for treating baby boomers struggling with an alcohol-use disorder. As described above, baby boomers that deny alcohol treatment need and possess an alcohol-use disorder may not experience substantial or lasting change, for example, just by having attending brief, generalized alcohol treatment.

The above findings point to the need for tailored alcohol treatment for baby boomers. In particular, these findings suggest that a primary treatment choice for baby boomers with alcohol-use disorders may be a modality that focuses on treatment need recognition and motivation to change. Motivational interviewing (MI) is one such modality, possessing an emphasis on strategies that focus on enhancing change-talk and "rolling with resistance", that has consistently been found to be successful among alcohol users struggling with denial of treatment need and motivation for change (Kress & Hoffman, 2008; Miller & Rollnick, 2002; Moyer, Finney, Swearingen, & Vergun, 2002)

Several recommendations can be made for future research. The current study is one of only a handful of studies known to exist that examine factors predicting alcohol-use disorders

among exclusive samples of baby boomers who report denying alcohol treatment need. The current findings therefore are tentative: further studies of this kind are needed, focusing specifically on the baby-boomer cohort and further aspects of alcohol-related behaviors. In addition, few large-sample surveys report age categories that allow for secondary data analysis of particular birth cohorts, especially the baby-boomer cohort. Future research will need to expand the age categories in order to allow further baby boomer-specific research to be conducted. In addition, longitudinal research of exclusive samples of baby boomers is needed in order to better understand causative factors for alcohol use and related phenomena.

Limitations

This study possessed several limitations. First, the datasets corresponding to 2010/2009 and 1998/1997 are cross-sectional in design, combining two years each, and consisting of different participants for each respective year. Conclusions such as those that might be drawn from performing a trend analysis of a longitudinal dataset – which follows the same participants across time – cannot be obtained using this study's data; therefore, directional causation is difficult to establish in the current study. Third, this study is exploratory in nature and is limited by the range of variables that were chosen for measure, particularly the range of life course-related variables available in the NSDUH datasets. As a result, the so-called "best" models that were obtained for each time period can only be considered the best among the variables that were available in the NSDUH. Furthermore, a time effect may also have interacted with measures of baby boomers across the 1998/1997 and 2010/2009 time periods (e.g., economy changes). In addition, the proportion of baby boomers that reported a perceived need for alcohol treatment and concurrently possessed an alcohol-use disorder was small. Therefore, no direct inferences could be made regarding the characteristics of this particular subgroup.

Inferences regarding the significance of the regression models for each time period (i.e., 2010/2009 and 1998/1997) are subject to the usual problems encountered in regression modeling. First, the data are obtained from self-reports of alcohol use, and the accuracy of the data depend on the participants' truthfulness and memory; some underreporting and/or overreporting may take place. Second, the target population for the NSDUH surveys each year is defined as a noninstitutionalized civilian population of the United States. This excludes a small proportion of the total population such as active-duty military and individuals living in institutions such as hospitals, prisons, nursing homes, and treatment centers. As a result, statistical estimates may be slightly inaccurate. Finally, some inconsistency may exist among variables within each dataset due to the statistical methods used to impute missing values.

Conclusion

In conclusion, the current study examined factors that predict alcohol-use disorders among baby boomers who deny alcohol treatment need across the life course. The main finding suggests that brief generalized alcohol treatment may be ineffective in the treatment of baby boomers with alcohol-use disorders. Rather, as this unprecedentedly large birth cohort enters older adulthood evidence-based tailored interventions are needed in order to provide effective treatments for baby boomers.

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Table 4.1. *The baby-boomer cohort age range and subpopulation size by time period*

Birth Year	Age 2010/2009	Age in 1998/1997
1946	64	52
1960	50	38
Subpopulation Size (*N*)	6,027	5,711

Table 4.2. *Candidate explanatory variables by category*

Demographics	Health/Mental Health	Drug Events	Drug Use (Past Year)
Gender	Overall Health	Age 1st Used Alcohol	Pain Relievers
Race	Past Yr. Mental Health Outpatient Treatment	Past Yr. Treatment for Alcohol Use	Cocaine
Past Yr. Income [a]	Cigarettes Past Month	Past Yr. Treatment for Illicit Drug Use	Hallucinogens
Past Yr. Marital Status		Past Yr. DUI (2010 only)	Inhalants
Education Level			Marijuana
Past Yr. Household Size			Sedatives
No. of Times Moved in Past 5 Years			Stimulants
Metro/Non-Metro Residence			Tranquilizers
Past Yr. Employment Status			Heroin
Past Yr. Religious Service Attendance			

[a] Measured as total household income per year

Table 4.3. *Sample characteristics among baby boomers in 2010/2009 and 1998/1997*

	2010/2009 (*N* = 6,027) %	1998/1997 (*N* = 5,711) % or *M (SD)*
Age (years)	50 – 64[a]	45.62 (3.70)
Gender		
Male	50.24	50.98
Female	49.75	49.02
Race/ethnicity		
White/Non-Hispanic	77.53	78.32
African American	9.71	10.13
Hispanic	8.25	7.82
Non-Hispanic Asian	2.80	-
Other	1.69	3.71
Income[b]		
Less than $20,000	11.88	18.13
$20,000 - $49,999	28.18	32.07
$50,000 - $74,999	19.01	23.23
$75,000 or More	40.91	26.54
Marital Status		
Married	66.46	74.15
Widowed	4.42	1.32
Divorced or Separated	21.01	14.97
Never Been Married	8.08	9.53
Education		
Less than high school	10.66	10.62
High school graduate	30.28	31.15
Some college	25.70	26.26
College graduate	33.35	31.95

All Ns in column heading are expressed as unweighted values. All table values are weighted column percentages
[b] Measured as total household income per year

Table 4.4. *Best logistic regression model predicting alcohol use disorders among baby boomers reported denying alcohol treatment need in 2010/2009: Odds ratios (OR) and 95% confidence intervals (CI)*

	OR	95% CI		OR	95% CI
Gender			No. of Times Moved in Past 5 Years		
Female (Male)	.49***	.33, .74	One (None)	.91	.67, 1.24
Race/ethnicity			Two (None)	.80	.46, 1.37
African American (White/Non-Hispanic)	1.47	.88, 2.46	Three (None)	.66	.28, 1.54
Hispanic (White/Non-Hispanic)	1.09	.53, 2.23	Four (None)	.93	.37, .2.31
Non-Hispanic Asian (White/Non-Hispanic)	0.48	.16, 1.43	Five (None)	2.03	.52, 7.91
Other (White/Non-Hispanic)	1.10	.50, 2.38	Six (None)	3.46*	1.18,10.18
Income [a]			Metro/Rural Residence		
$20,000 - $49,999 (Less than $20,000)	..55*	.34, .91	Small Metro (Large Metro)	1.43	1.00, 2.04
$50,000 - $74,999 (Less than $20,000)	.60	.33, 1.07	Rural (Large Metro)	1.22	.81, 1.83
$75,000 or More (Less than $20,000)	.77	.44, 1.35	Past Yr. Mental Health Outpatient Treatment (No Treatment)	2.56*	1.13,5.79
Marital Status			Age 1st Used Alcohol		
Widowed (Married)	1.16	.51, 2.62	13-17 Years Old (12 Years or Younger)	.80	.50,1.30
Divorced or Separated (Married)	1.74**	1.18, 2.6	18 Years or Older (12 Years or Younger)	.37*	.21,.67
Never Been Married (Married)	1.25	.77, 2.01	Past Yr. Treatment for Alcohol Use (No Treatment)	8.30***	2.89,23.78
Education			Past Yr. Treatment for Illicit Drug Use (No Treatment)	.12*	.02,.78
High school graduate (Less than high school)	.75	.48, 1.17	Past Yr. Charged with Driving Under the Influence (Not Charged)	6.02**	1.67,21.69
Some college (Less than high school)	1.07	.70, 1.64	Past Yr. Pain Reliever Use (No Use)	2.10*	1.11,3.99
College graduate (Less than high school)	.76	.46, 1.27	Past Yr. Cocaine Use (No Use)	1.70	.67,4.31
			Past Yr. Hallucinogen Use (No Use)	.06*	.01,.83
			Past Yr. Marijuana Use (No Use)	2.94***	1.94,4.47

N = 6,027; * $p < .05$; ** $p < .01$; *** $p < .001$; [a] Measured as total household income per year

Table 4.5. *Best logistic regression model predicting alcohol use disorders among baby boomers reported denying alcohol treatment need in 1998/1997: Odds ratios (OR) and 95% confidence intervals (CI)*

	OR	95% CI		OR	95% CI
Gender			Age 1st Used Alcohol		
Female (Male)	.55***	.39,.76	13-17 Years Old (12 Years or Younger)	1.17	.69, 1.99
Race/ethnicity			18 Years or Older (12 Years or Younger)	.91	.50, 1.63
African American (White/Non-Hispanic)	1.11	.74,1.66	No. of Times Moved in Past 5 Years		
Hispanic (White/Non-Hispanic)	1.14	.68,1.92	One (None)	.92	.60, 1.40
Other (White/Non-Hispanic)	1.86	.83,4.17	Two (None)	1.05	.35, 3.16
Income [a]			Three or more (None)	.41	.10, 1.78
$20,000 - $49,999 (Less than $20,000)	.60*	.36, .99	Household Size		
$50,000 - $74,999 (Less than $20,000)	.60	.31, 1.16	Two people (One person)	1.09	.57, 2.09
$75,000 or More (Less than $20,000)	.72	.34,1.52	Three people (One person)	1.01	.51, 1.99
Marital Status			Four people (One person)	.72	.35, 1.49
Widowed (Married)	1.90	.72, 5.03	Five people (One person)	.82	.37, 1.79
Divorced or Separated (Married)	1.44	.91, 2.27	Six or more people (One person)	.89	.40, 2.00
Never Been Married (Married)	1.38	.78, 2.43	Employment Status		
Education			Employed Part Time (Employed Full Time)	1.47	.94, 2.31
High school graduate (Less than high school)	.87	.54, 1.42	Unemployed (Employed Full Time)	1.20	.62, 2.36
Some college (Less than high school)	.50*	.26, .97	Religious Service Attendance, Past Yr.		
College graduate (Less than high school)	.81	.44, 1.50	Rarely Attended (Not Religious/Did not Attend)	.84	.56, 1.27
Past Yr. Treatment for Alcohol Use (No Treatment)	2.69**	1.40, 5.18	Infrequently Attended (Not Religious/Did not Attend)	.64	.39, 1.05
Past Yr. Pain Reliever Use (No Use)	2.15	.89, 5.16	Frequently Attended (Not Religious/Did not Attend)	.37***	.23, .60
Past Yr. Cocaine Use (No Use)	1.49	.70, 3.17	Rarely Attended (Not Religious/Did not Attend)	.84	.56, 1.27
Past Yr. Marijuana Use (No Use)	1.70*	1.01, 2.89			
Smoked Cigarettes in Past Month (No Cigarettes)	3.33***	2.32, 4.78			

N = 5,711; * $p < .05$; ** $p < .01$; *** $p < .001$; [a] Measured as total household income per year

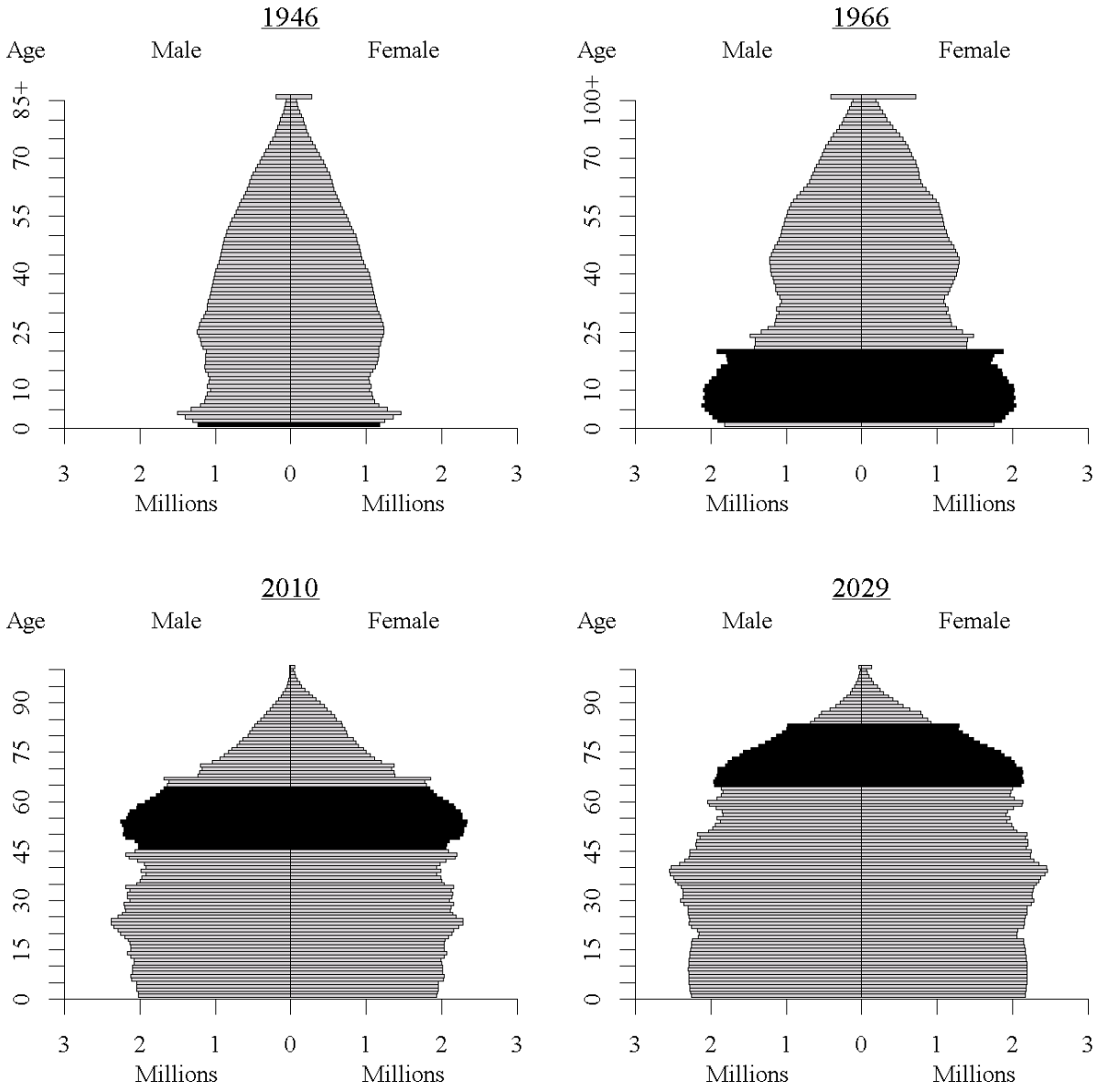

Figure 4.1. Pyramid plots displaying impact of baby boomers (dark area) on U.S. population over time (U.S. Census Bureau).

CHAPTER 5

SUMMARY AND FUTURE DIRECTIONS

As an unprecedentedly large cohort of baby boomers enters older adulthood, initial research suggests that differences may emerge in patterns of alcohol use in later life and the subsequent treatment needs, particularly related to treatment delivery. This dissertation contributes to social work theory, research, and practice by providing a comprehensive examination of past and current evidence related to treating baby boomers who struggle with alcohol-use disorders. Subsequently, using a life course theory theoretical framework this dissertation provides some of the first research examining factors predicting alcohol-use disorders and indicators of a lack of alcohol problem recognition among exclusive samples of baby boomers. The following sections provide brief reviews of the findings from the three articles reported in this dissertation as chapters 2, 3, and 4, respectively.

Chapter 2: A scoping review of treatments for baby-boomers with alcohol-use disorders

With a dearth of research specifically studying alcohol-use treatment among exclusive samples of baby boomers, a scoping review was conducted in order to contribute further knowledge to social work theory, research, and practice. The findings from the scoping review chapter suggest that baby boomers struggling with alcohol-use disorders may be most responsive to cognitive-behavior and motivational enhancement-based interventions.

Chapter 3: Factors that impact alcohol use disorders among baby boomers across the life course

Next, chapter 3 examined factors the impacted alcohol-use disorders among baby boomers across the life course. A set of explanatory variables from 2010/2009 and 1998/1997 which were found to best predict alcohol-use disorders among baby boomers. 13 risk and protective factors were found to predict alcohol-use disorders at each time period. The primary finding was that both risk and protective factors, which had substantially influenced the development of alcohol-use disorders among middle-aged baby boomers, were replaced by different but similar factors as the baby-boomer cohort approached older adulthood. Despite changes in particular factors, this study found that at both time periods the majority of factors, including drugs used as well as consequences of alcohol use behavior, suggested an underlying impulsivity characteristic which appeared to remain stable over time. In addition, protective factors, such as interpersonal relationships, were found to become statistically significant as baby boomers aged. The findings from this study suggest that as baby boomers with alcohol-use disorders have aged, impulsive characteristics among the factors predicting alcohol-use disorders have remained stable. Moreover, protective factors have become more salient in their impact upon drinking problems. These findings suggest that a primary treatment choice for baby boomers possessing alcohol-use disorders is a modality that emphasizes impulse control as well as strengthening social bonds.

Chapter 4: Factors related to lack of alcohol problem recognition among baby boomers across the life course

Chapter 4 examined salient predictors of alcohol-use among baby boomers who deny treatment need at two time periods, 2010/2009 and 1998/1997. Variable selection procedures

were performed, resulting in two predictive models for alcohol-use disorders among baby boomers for 2010/2009 and for 1998/1997. The primary finding that emerged was that among baby boomers who deny alcohol treatment need, baby boomers who received alcohol treatment in the past year are significantly more likely to possess an alcohol use disorder, with the magnitude of these odds increasing between 1998/1997 and 2010/2009. In addition, at both time periods only 20% of those baby boomers who possessed an alcohol-use disorder and also received alcohol treatment in the past year reported receiving specialty care (i.e., inpatient or outpatient treatment at an alcohol rehabilitation center), suggesting that brief generalized alcohol treatment may be ineffective in the treatment of baby boomers with alcohol-use disorders. Cost-effective, tailored interventions, such as motivational enhancement therapies, are recommended in order to provide effective treatment for aging baby boomers

Practice and Future Research Implications

Based upon the findings from chapters 2, 3, and 4, a number of implications for future research can be suggested. First, the scoping review in chapter 2 indicates that baby boomers, as a large subpopulation of the U.S., have been largely overlooked in terms of a research focus. The review could not find a single treatment outcome study that possessed an exclusive sample of baby boomers. Next, the literature on alcohol-use disorders suggests that interventions which focus on cognitive barriers, such as problem recognition, treatment readiness, and desire to change, may be provide effective alcohol treatments; in particular, cognitive behavior-based therapies and motivational-enhancement therapies were found to be the most effective in the scoping review of chapter 2.

The results reported in Chapters 3 and 4 support the latter treatment recommendations above. Chapter 3 found that factors related to impulsivity predicted alcohol-use disorders among

baby boomers. This finding may indicate the use of alcohol use treatments which focus on thoughts and behaviors related to impulse control, such as cognitive behavior therapies. Next, the results from chapter 4 suggest that future research should focus upon examining alcohol treatments that reduce treatment barriers such as denial of treatment need and motivation to change. Therefore, based on the findings in this dissertation, recommendations for future research include investigating exclusive samples of baby boomers, focusing on pretreatment characteristics such as impulsivity and perceptions of treatment need. From a policy standpoint, chapter 3's findings suggest implications at the decision-making level. In particular, policymakers may need to focus on cost-effective, evidence-based treatments, such as cognitive behavior therapy, which encourage impulse control and reduce social isolation. Likewise, the findings reported in chapter 4 suggest that the majority of baby boomers who experience alcohol interventions may not be receiving effective treatment.

Social Work Policy Implications

The three studies reported in this dissertation possess several policy implications. First, the findings from chapter 2 indicate that little research has been reported which focuses exclusively on alcohol-use disorder treatment outcome among exclusive samples of baby boomers. The findings suggest that little is known regarding the specific needs of the baby boomer cohort. Social work policy needs to focus on developing research funding toward further examination of baby boomer's current and future healthcare needs, alcohol-use treatment needs in particular. Without sufficient information regarding this large, unprecedented cohort of aging adults, social work will not be equipped to provide knowledgeable recommendations at the macro-level of social work practice (e.g., the impact facing the economy due to labor loss affected by problematic alcohol use, and the impact facing low-income U.S. citizens if healthcare

costs begin to rise as the baby-boomer cohort overwhelm an ill-prepared healthcare system). Furthermore, micro-level knowledge is necessary as well for social workers to acquire related to ongoing needs for policies to affect changes in social work education. Social work schools must begin to emphasis clinical treatment of older adults and gerontology-related healthcare in their core curriculums.

Chapters 3 and 4 report results that suggest a need to focus on social policy which increases federal, state, and community funding for effective, evidence-based treatments, such as cognitive behavior and motivational enhancement therapies – targeting increased impulse control and reducing social isolation among the aging baby boomer cohort. In addition social workers must advocate at a systems level (i.e., government funded healthcare policy) regarding the provision of specialty treatments, rather than non-specific generalized treatments. Social work policy can be formulated that communicate the healthcare and treatment needs of the aging baby boomer cohort to legislatures and stakeholders who can subsequently generate the necessary funding for programs to be put in place. Likewise, in conjunction with the creation of additional specialty-care treatment facilities, policies focusing on changes in social work education are needed in order to develop bachelors- and masters-level social work curriculums that teach social work competencies related to gerontology and the needs of the aging adult.

In order for the social work profession to be lead the way in social policy change and in the clinical fields of practice, social work education must ensure that future social workers are prepared to affect change in larger systems (i.e., federal, state, and local government) and that social workers possess the knowledge, awareness, and clinical skills to provide effective supervision and psychosocial interventions to baby boomers as they enter older adulthood.

Limitations

The three studies that composed this dissertation possessed a number of limitations. The coping review study comprising Chapter 2 reviewed studies only published in the English language. In addition, no attempt was made to incorporate unpublished works, such as dissertations or other manuscripts, into the scoping review. Since the publications were assigned ratings based upon methodological and design qualities, the effectiveness of certain interventions may have been contingent upon the quality of the research conducted. The publication ratings were assigned by a single rater and lack interrater reliability. In addition, no research studies were obtained that studied baby boomers exclusively. Therefore, the conclusions drawn in chapter 2 in this review may be somewhat confounded by the use of studies in which baby boomers comprised a large majority of the sample only.

Next, chapters 3 and 4 shared many of the same limitations. Both chapters 3 and 4 used datasets that were cross-sectional in design, combining two years each, and consisting of different participants for each respective year. Conclusions such as those that might be drawn from performing a trend analysis of a longitudinal cannot be obtained using this study's data; therefore, a causative pathway is difficult to establish in both studies. In addition, both studies in chapter 3 and 4, respectively, were limited by the range of variables that were chosen for measure. As a result, "best" models that were obtained for each time period can only be considered the best among the variables that were available in the NSDUH. A time effect may also have interacted with measures of baby boomers across the 1998/1997 and 2010/2009 time periods (e.g., economy changes).

In addition, in both chapters 3 and 4 inferences regarding the significance of the regression models for each time period (i.e., 2010/2009 and 1998/1997) are subject to the usual

problems encountered in regression modeling. First, the data are obtained from self-reports of drug use, and the accuracy of the data depend on the participants' truthfulness and memory; some underreporting and/or overreporting may take place. Second, the target population for the NSDUH surveys each year is defined as a noninstitutionalized civilian population of the United States. This excludes a small proportion of the total population such as active-duty military and individuals living in institutions such as hospitals, prisons, nursing homes, and treatment centers. As a result, statistical estimates may be slightly inaccurate. Finally, some inconsistency may exist among variables within each dataset due to the statistical methods used to impute missing values.

Conclusion

In conclusion, this dissertation reported three studies related to alcohol-use disorders among baby boomers across the life course. The first study reported findings from a scoping review. Among the most rigorously designed studies found in this review, cognitive behavior-based therapies and motivational-enhancement therapies were found to be potential candidates for effective alcohol use treatment among baby boomers. The second study explored changes in factors predicting alcohol-use disorders among baby boomers from a life course theoretical framework. This study found that an underlying characteristic of impulsivity remained among baby boomers across time. The third study examined salient predictors of alcohol-use among baby boomers who deny treatment need at two time periods. The results from the third study suggest that brief generalized alcohol treatment may be ineffective in the treatment of baby boomers with alcohol-use disorders. Rather, as baby boomers enter older-adulthood, cost-effective, tailored interventions are needed in order to provide effective treatment. Further

research is needed in order to develop tailored alcohol treatment approaches for this unique subpopulation of the U.S.

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