

Financial Decision-Making and Capacity in Older Adults

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INTRODUCTION: WHAT IS FINANCIAL CAPACITY? LEGAL, CLINICAL AND ETHICAL PERSPECTIVES

Financial capacity is a medical–legal construct that represents the ability independently to manage one’s own financial affairs in a manner consistent with personal self-interest and values (Marson & Hebert, 2008; Marson, Triebel, & Knight, 2012). Financial capacity thus involves not only performance skills (e.g., counting coins/currency accurately, completing a check register accurately, paying bills) but also judgment skills that optimize financial self-interest, and values that guide personal financial choices. Financial experience and skills can vary widely among cognitively normal adults and are associated with factors such as education, occupational attainment, and socioeconomic status (American Bar Association & American Psychological Association [ABA/APA] Assessment of Capacity in Older Adults Project Working Group, 2008; Marson et al., 2012).

From a legal standpoint, financial capacity represents the financial skills necessary for handling a person’s financial affairs and estate, and is the basis for determinations of conservatorship of the estate (or guardianship of the estate, depending on the state legal jurisdiction).

Broadly construed, financial capacity also conceptually encompasses more specific legal capacities such as contractual capacity, donative capacity, and testamentary capacity. Thus, financial capacity is an important area of property rights in the civil legal system (ABA/APA Assessment of Capacity in Older Adults Project Working Group, 2008; Marson & Hebert, 2008), and one that psychologists and other clinicians are increasingly called upon to evaluate in forensic settings (Marson, 2002; Marson et al., 2012; Widera, Steenpass, Marson, & Sudore, 2011).

Historically, the legal standard for financial capacity in conservatorship statutes was generally (and vaguely) cast as the capacity to manage “in a reasonable manner all of one’s financial affairs” (ABA/APA Assessment of Capacity in Older Adults Project Working Group, 2008). A more modern and specific standard is set forth in Section 410(2) of the Uniform Guardianship and Protective Proceedings Act (UGPPA), which states that a court may appoint a conservator if the court determines that “the individual is unable to manage property and business affairs because of an impairment in the ability to receive and evaluate information or make decisions, even with the use of appropriate technological assistance; and the individual has property that will be wasted or dissipated unless management is

provided, or funds are needed for the support of the individual or of others entitled to the individual's support" (UGPPA, 1997; see also [ABA/APA Assessment of Capacity in Older Adults Project Working Group, 2008](#); [Marson, 2001](#); [Marson, Hebert, & Solomon, 2011](#); [Marson et al., 2000](#)). This is a two-pronged legal definition for conservatorship that requires not only impairment of financial skills, but also property and/or individuals at risk due to this impairment.

From a clinical standpoint, financial capacity is a cognitively complex instrumental activity of daily life (IADL) that is vulnerable to neurological, psychiatric, and medical conditions that affect cognition such as dementia, stroke, traumatic brain injury (TBI), and schizophrenia ([Marson et al., 2012](#)). In particular, clinical issues of financial capacity arise frequently in the context of older adults with cognitive decline and dementia. Family members of such older adults often raise concerns about an elderly person's new problems managing household finances, making poor financial decisions, or being financially exploited. Clinicians are increasingly being asked by families, physicians, clinicians, attorneys, and judges to evaluate and offer clinical opinions regarding the financial capacity of older adults ([ABA/APA Assessment of Capacity in Older Adults Project Working Group, 2008](#); [Marson & Hebert, 2008](#); [Widera et al., 2011](#)). These decisions can be highly charged given the psychological importance of managing one's own funds. Along with driving and mobility, financial capacity is a core aspect of individual autonomy in our society ([Marson, 2001](#); [Marson et al., 2000, 2011, 2012](#)).

In contrast, despite its importance, bioethicists have given relatively little attention to financial capacity and the issues that it raises for younger and older adults, their families, and for clinicians and other professionals ([Marson, 2013](#)). This is somewhat surprising, insofar as considerable energy in bioethics has

been devoted in recent years to issues of treatment consent capacity and research consent capacity in older individuals with dementia, schizophrenia, and other severe neuropsychiatric disorders ([Appelbaum & Grisso, 1995](#); [Dunn & Jeste, 2003](#); [National Bioethics Advisory Commission, 1998](#); [Roberts, Warner, Anderson, Smithpeter, & Rogers, 2004](#); [Roberts et al., 2003](#); [Stroup & Appelbaum, 2003](#)). However, the bioethics and clinical literature has been largely silent concerning financial capacity ([Marson, Savage, & Phillips, 2006](#)). As trenchantly noted by Frank and Degan, "the literature of law and psychiatry is unaccountably mute on the subject of patients' competence to handle money" ([Frank & Degan, 1997](#); [Marson et al., 2006](#)).

This silence signals a key knowledge gap for bioethics, insofar as financial capacity, like other decisional capacities, implicates core issues of personal autonomy in adults ([Moye, 1996](#)). Financial capacity is critical to, and possibly the single best litmus for, a person's ability to function independently in the community ([Melton, Petrila, Poythress, & Slobogin, 1987](#)). When financial capacity issues go unresolved, patients are at risk for significant financial losses that can jeopardize their living situation, estate planning, long-term care, and ultimately personal autonomy ([Faulk, 2011](#)). Loss of financial capacity also makes patients vulnerable to exploitation and abuse by others ([Rosenzweig, 2011](#)), and thus can present challenging situations for clinicians who may be morally and legally responsible to report such abuse ([Widera et al., 2011](#)). This is particularly true in cases where caregivers and family members are suspected of financially exploiting the older person. Thus loss of financial capacity presents ethical, as well as clinical and legal, issues for psychologists and other health care professionals treating adults with cognitive decline and psychiatric illness ([Marson, 2013](#)).

In this chapter, we examine issues related to financial decision-making and capacity of older adults in our aging society. Specifically, we

discuss the crucial phenomenon of cognitive aging and diminished financial capacity, the impact on financial capacity of cognitive disorders of aging such as Alzheimer's disease (AD), and the early warning signs of diminished financial capacity in older adults. We then present a clinical model of financial capacity that has proven useful as a means of articulating the financial capacity construct. Using the clinical model as a guide, we briefly describe different approaches to assessing financial capacity and then examine empirical research on financial capacity in older adults, with a particular focus on patients with cognitive disorders: mild cognitive impairment (MCI) and AD. This chapter concludes with sections addressing exciting new neuroimaging investigations of financial decision-making and capacity, the importance of psychiatric and other non-cognitive contributions to financial capacity in the elderly, and directions for future research in financial capacity.

THE FINANCIAL CAPACITY PROBLEM: COGNITIVE AGING AND DISORDERS OF AGING

Although financial capacity is an IADL essential for all community-dwelling adults, it is a topic with particularly important implications and urgency for older adults: there is a tremendous and underappreciated "financial capacity problem" posed by our rapidly growing older adult population. Older adults represent that portion of the US population most vulnerable to impairment and loss of financial skills and capacity, as a result of the effects not only of AD, Parkinson's disease, and related dementias, but also of normal cognitive aging (Marson & Sabatino, 2012).

Normal cognitive aging has been defined by Salthouse and colleagues as "...the decrease in performance on various measures of cognitive functioning associated with increasing age in

the adult portion of the lifespan" (Salthouse, 1991). Multiple cognitive abilities are affected in normal aging, with different trajectories of decline over time, including auditory and visual perception, divided attention, working memory and processing speed, episodic memory, executive and planning skills, numeracy and arithmetic skills, and "fluid intelligence" (Glisky, 2007; Salthouse, 1991). These normative cognitive declines in aging impact a range of financial skills, including attention to and recollection of investment details, appraisal of risk, comprehension of investment alternatives, and overall financial decision-making capacity (Laibson, 2011). Laibson and colleagues have suggested that age 53 is the time point in the human lifespan at which financial decision-making acumen reaches its apogee, with gradual diminution of financial abilities and increasing financial errors occurring from that point onward (Agarwal, Driscoll, Gabaix, & Laibson, 2009).

In addition to normal cognitive aging, older adults as an age group are also highly vulnerable to neurodegenerative diseases like AD and other cognitive disorders of aging, which can devastate financial decision-making and capacity (Marson et al., 2000, 2009). As discussed in more detail below, an increasing number of studies have documented substantial impairments of financial skills in patients with AD (Marson et al., 2000) and with Parkinson's disease dementia (Martin et al., 2013), as well as early but already salient financial impairments in prodromal cognitive states (e.g., MCI) associated with these dementias (Griffith et al., 2003; Martin et al., 2013; Triebel et al., 2009). Thus older adults are uniquely vulnerable over time to diminished or impaired financial capacity, due to cognitive declines associated with both normal cognitive aging and with cognitive disorders of aging.

The onset of this cognitive decline also comes at a point in the lifespan in which older adults have accumulated substantial personal

wealth and hold a disproportionate amount of wealth relative to other age groups (Marson & Sabatino, 2012). In the United States, older adults ages 65 and older currently comprise only 13% of the population (American Psychological Association, 2011) and 21.4% of family households (Laibson, 2011; Pilsen, 2011), but hold 34% of the nation's wealth (Laibson, 2011; Pilsen, 2011). This combination of wealth, cognitive decline, and diminished financial capacity represents a tremendous and growing economic and public policy challenge to our society. Given that overall household wealth in the United States in 2009 was estimated at \$53.1 trillion, the amount of wealth currently held in older adult households amounts to a staggering \$18.1 trillion (Laibson, 2011). This may be referred to as the "\$18.1 trillion dollar problem"—the fact that the disproportionate wealth of the older adult age group is at increasing risk due to this age group's unique situation of declining cognitive abilities and associated vulnerability to diminished financial capacity and to financial exploitation.

With the continued aging of our society, and the "silver tsunami," as coined by Dr. Alireza Atri, of Alzheimer's and related dementias mounting over the next few decades (estimated at over 14 million persons in the United States by 2050), both this percentage of households and overall older adult wealth will only increase, and issues of financial capacity in elders will become ever more prevalent and urgent.

CLINICAL WARNING SIGNS OF DIMINISHED FINANCIAL CAPACITY

Impairment and loss of financial capacity has important economic and psychological consequences for older adults and their families. Impaired individuals are at risk for making decisions that jeopardize assets needed for their

own long-term care, or that are intended for testamentary distribution to family members (Marson et al., 2000; Triebel & Marson, 2012). People with diminished financial capacity are also at risk for financial exploitation (Marson et al., 2000; Nerenberg, 1996; Widera et al., 2011), including consumer fraud and other financial scams (Marson et al., 2000; "Woman Out \$5,300 in Two Cons", 1996). Accordingly, early detection of impaired financial skills and prompt intervention are essential for protecting the economic resources and emotional well-being of impaired individuals and their families (Marson et al., 2000). Warning signs of declining financial capacity may be subtle at first, and family members may be slow or unwilling to recognize them. And, because of the loss of self-awareness and insight associated with AD, many individuals with late MCI or early AD do not recognize these financial declines in themselves (Okonkwo et al., 2008; Triebel & Marson, 2012; Wadley, Harrell, & Marson, 2003).

In addressing specific clinical warning signs, it is important to consider a person's prior level of financial functioning and experience. A "warning sign" of financial decline inherently implies a change from a prior level of performance. Individual financial experiences can vary widely because of educational, socioeconomic, occupational, and other factors. For example, take an elderly lady who in the past was very skilled, meticulous, and detail-oriented regarding her finances, but who now forgets to pay bills on time and who increasingly must rely on others to make financial decisions for her. There has been a clear departure from the elderly lady's premorbid level of financial functioning or baseline. Contrast this situation to that of an elderly man who throughout his life has never been skilled with money and in fact has had a lifelong pattern of mismanaging his finances. The latter individual's current financial problems are simply the newest iteration of his ongoing problem of managing money, and thus do not represent a

“warning sign” of change in his financial capacity (TriebeI & Marson, 2012).

Our group has identified six clinical warning signs of diminished financial capacity, based on our aggregated clinical and research experience with cognitively impaired older adults (TriebeI & Marson, 2012). As discussed above, to be true warning signs, the following behaviors should reflect clear declines from an individual’s prior baseline level of financial functioning:

- *Memory lapses*: Increasing memory lapses resulting in errors and failure to fulfill financial obligations (failing to pay bills, paying the same one several times)
- *Disorganization*: Increasing disorganization and misplacement of financial and other documents at home, with associated failures such as missing tax and other deadlines
- *Declines in checkbook management skills*: Changes in a person’s ability to use a checkbook and check register to carry out everyday transactions
- *Arithmetic mistakes*: Noticeable declines in everyday math skills, such as those employed when making change to pay for things at the store, or when computing an appropriate tip in a restaurant
- *Conceptual confusion*: Increasing confusion and loss of general knowledge regarding basic financial terms and concepts such as mortgage, will, or annuity
- *Impaired judgment*: Loss of judgment about financial investments and use of money, often manifested as a new and abiding interest in get-rich-quick schemes, as well as unfounded anxiety about the nature and extent of one’s personal wealth.

Once financial warning signs are detected, families must act promptly and have “the conversation” with the older individual, in order to protect the vulnerable elderly person’s financial assets and prevent possible future financial catastrophe (Siegel-Bernard, 2010). At the same time, this conversation and the steps taken by

family members need to be carefully considered and implemented in light of the individual and family dynamics involved (TriebeI & Marson, 2012).

CHALLENGES IN MODELING FINANCIAL CAPACITY

Since Lawton’s seminal 1969 paper on IADLs (Lawton & Brody, 1969), it is striking how little conceptual and definitional work has been conducted in the area of financial capacity. Early work in the area of IADLs offered only very elementary and unsatisfactory schema such as “financial management skills,” without providing needed conceptual structure or detail. This theoretical vacuum has to some degree persisted to the present day, as surprisingly few clinical definitions or models of financial capacity exist. In part this vacuum relates to the fact that financial capacity is a complex, multidimensional construct (Marson et al., 2012). It comprises a broad range of conceptual, pragmatic, and judgment abilities, used on an ongoing, daily basis across a range of everyday settings, that are critical to the independent functioning of adults in our society (Marson, 2001; Marson et al., 2000, 2011). Studies have suggested that financial capacity is an “advanced” or instrumental activity of daily living (IADL) (Marson et al., 2000; Wolinsky & Johnson, 1991). Advanced ADLs are mediated by higher cognitive functions and can be distinguished from “household” ADLs (e.g., meal preparation, shopping, housekeeping) and “basic” ADLs (e.g., bathing, dressing, walking) (Wolinsky & Johnson, 1991). Financial capacity itself entails a broad set of abilities, ranging from very basic skills of identifying and counting coins/currency, to conducting cash transactions, to higher-level abilities of managing a checkbook and a bank statement, to complex activities of making investment decisions and asset purchases. In addition, as might be expected, financial abilities can vary

enormously across individuals, depending on a person's socioeconomic status, occupational attainment, and overall financial experience (Marson, 2001; Marson et al., 2000).

Financial capacity can be understood to have both a performance aspect and a judgment aspect (Marson et al., 2012). To possess financial capacity, a person must be able to perform a variety of tasks and skills in order to meet his or her needs within his/her life context. Such tasks and skills include understanding basic financial concepts, possessing basic monetary skills, carrying out cash transactions in a grocery store, and paying bills. However, in addition to such performance skills, an individual must also be able to exercise judgment and decision-making to promote his or her own financial well-being. Thus, in addition to performance skills, the individual must be able to carry out financial activities in ways that promote and protect his or her self-interest (Marson, 2001; Marson et al., 2000, 2011).

For all these reasons, financial capacity has been a complex construct to define and model clinically. No widely accepted clinical definition for financial capacity exists. Our group has proposed the following definition: "the capacity to manage money and financial assets in ways that meet a person's needs and which are consistent with his or her values and self-interest" (Marson et al., 2011; Widera et al., 2011). This working definition incorporates performance and judgment aspects characteristic of financial capacity (see above), as well as consideration of a person's longstanding financial values. It also implicitly incorporates the concept of financial decision-making and judgment as a component of overall financial capacity.

CLINICAL MODEL OF FINANCIAL CAPACITY

We present below a clinically based conceptual model of financial capacity in older adults

(Marson, 2001; Marson et al., 2000; Martin et al., 2008). This model has been the basis for instrument development and for ongoing empirical studies of financial capacity in MCI, AD, and other clinical populations such as TBI (Dreer, DeVivo, Novack, & Marson, 2012; Marson, 2001; Marson et al., 2000, 2011; Martin et al., 2013), which are discussed in a subsequent section of this chapter.

Because financial capacity represents a broad continuum of activities and specific skills, it may be best conceptualized as a series of domains of activity, with each having specific clinical relevance (Griffith et al., 2003; Marson, 2001; Marson et al., 2000). Examples of these domains include: basic monetary skills, carrying out cash transactions, managing a checkbook, managing a bank statement, exercising financial judgment and avoiding scams, and making investment decisions. This domain-based approach is clinically oriented and is consistent with the presumed multidimensionality of financial capacity and its variability across individuals. It is also consistent with the legal principle of limited financial competency adopted within most state legal jurisdictions, which recognizes that an individual may be competent to carry out some financial activities and not others (Grisso, 1986; Marson, 2001; Marson et al., 2000, 2011).

In addition to domains of activity, this model identifies specific financial abilities, or tasks (Marson, 2001; Marson et al., 2000). Tasks reflect discrete financial skills that when combined together comprise domain-level capacities. For example, the domain of "financial conceptual knowledge" might draw upon specific abilities, such as understanding simple concepts (e.g., a loan or savings) and pragmatically applying such concepts in everyday life (e.g., selecting interest rates, identifying a medical deductible, or making simple tax computations). The domain of financial judgment might consist of tasks related to detection/awareness of financial fraud, or of creating a balanced household

budget. Therefore, tasks represent abilities that when combined together constitute broader, clinically relevant domains of financial activity. In our model we have defined tasks as being simple or complex, depending on the level of cognitive resources they appear to require (Marson, 2001; Marson et al., 2000, 2011).

The model also considers financial capacity at the global level (Griffith et al., 2003; Marson, 2001). Capacity, or competency as referenced in the legal sphere, is ultimately an overall categorical judgment or classification made by a clinician or legal professional. Thus, the clinical model has three levels (Griffith et al., 2003): (i) general domains of financial activity, which are each clinically relevant to the independent functioning of community-dwelling older adults; (ii) specific financial abilities or tasks, each of which is relevant to a particular domain of financial activity; (iii) overall financial capacity, which reflects a global estimate of capacity based on overall domain- and task-level performance. A recent revised version of the model, presented in Table 19.1, is composed of nine domains, 18 tasks, and two global levels (Griffith et al., 2003; Marson, 2001; Marson et al., 2000, 2011; Martin et al., 2008). This model has been the basis for financial capacity instrument development, including the Financial Capacity Instrument (FCI), which is discussed later in this chapter.

APPROACHES TO ASSESSING FINANCIAL CAPACITY

Regardless of the assessment approach, the goal of a financial capacity assessment is to evaluate a patient's current financial functioning in reference both to the patient's current environmental demands and his/her premorbid financial experience and abilities. At least three different measurement approaches exist for clinically assessing financial capacity (Marson et al., 2011). These approaches are: (i) patient and informant-based ratings and reports of financial

skills, (ii) direct assessment of financial skills using performance-based instruments, and (iii) clinical interview approaches that involve clinician interviewing to obtain information about a patient's financial skills and functioning. A patient and informant-based report of everyday financial functioning in community settings can be gathered through written questionnaire or rating forms. Performance-based instruments provide a direct and quantitative assessment of specific financial skills that are norm referenced and usually more finely grained than rating forms. Clinical interviews combine the strengths of both informant rating/report and direct performance approaches, by drawing upon the interviewing skills of a clinician who can also choose to use various direct assessment techniques to examine financial skills. In the sections below, we provide an overview of the three assessment approaches and highlight examples of instruments developed for each approach. However, before doing so, we first address the key conceptual issue of assessing premorbid financial capacity.

Assessing Premorbid Financial Capacity

As noted above, the financial experience and skills of individuals vary widely, based on educational, occupational, socioeconomic status, and other factors. Thus, when conducting a financial capacity evaluation, one of the clinician's first objectives is to estimate a patient's premorbid financial experience and ability levels. Using this information, the clinician can form an impression of premorbid function against which current financial activities and performance levels can be measured and compared. In addition, information on premorbid financial function can inform the areas of evaluation and test measures used. For example, if a patient has never used a checkbook/register to pay bills, but instead has used only money orders or cash, it would be inappropriate to assess his/her checkbook management abilities and conclude that impaired performance

TABLE 19.1 Clinical Conceptual Model of Financial Capacity: 9 Domains, 18 Tasks, 2 Global Scores

Domain/Task	Description	Difficulty
DOMAIN 1	BASIC MONETARY SKILLS	
Task 1a Naming coins/currency	Identify specific coins and currency	Simple
Task 1b Coin/currency relationships	Indicate relative monetary values of coins/currency	Simple
Task 1c Counting coins/currency	Accurately count groups of coins and currency	Simple
DOMAIN 2	FINANCIAL CONCEPTUAL KNOWLEDGE	
Task 2a Define financial concepts	Define a variety of financial concepts	Complex
Task 2b Apply financial concepts	Practical application/computation using concepts	Complex
DOMAIN 3	CASH TRANSACTIONS	
Task 3a 1 item grocery purchase	Enter into simulated 1 item transaction; verify change	Simple
Task 3b 3 item grocery purchase	Enter into simulated 3 item transaction; verify change	Complex
Task 3c Change/vending machine	Obtain change for vending machine use; verify change	Complex
Task 3d Tipping	Understand tipping convention; calculate/identify tips	Complex
DOMAIN 4	CHECKBOOK MANAGEMENT	
Task 4a Understand checkbook	Identify and explain parts of check and check register	Simple
Task 4b Use checkbook/register	Enter into simulated transaction; pay by check	Complex
DOMAIN 5	BANK STATEMENT MANAGEMENT	
Task 5a Understand bank statement	Identify and explain parts of a bank statement	Complex
Task 5b Use bank statement	Identify specific transactions on bank statement	Complex
DOMAIN 6	FINANCIAL JUDGMENT	
Task 6a Detect mail fraud risk	Detect and explain risks in mail fraud solicitation	Simple
Task 6c Detect telephone fraud risk	Detect and explain risks in telephone fraud solicitation	Simple
DOMAIN 7	BILL PAYMENT	
Task 7a Understand bills	Explain meaning and purpose of bills	Simple
Task 7b Prioritize bills	Identify bills that need immediate attention	Simple
Task 7c Prepare bills for mailing	Prepare simulated bills, checks, envelopes for mailing	Complex
DOMAIN 8	KNOWLEDGE OF ASSETS/ESTATE	
	Indicate/verify asset ownership, estate arrangements	Simple
DOMAIN 9	INVESTMENT DECISION MAKING	
	Understand investment options/returns; make decisions	Complex
Global 1 Domains 1–7	Overall performance across domains 1–7 and tasks	
Global 2 Domains 1–7 + 9	Overall performance across domains 1–7 + 9 and tasks	

Adapted from and reprinted with permission from [Griffith et al. \(2003\)](#), permission from the American Academy of Neurology.

necessarily is the product of a mental disorder or illness. Instead, the examiner should inquire as to whether the individual has previously used a checkbook, and if not, what other forms of payment have been used, such as money orders or cash—and tailor the evaluation tasks accordingly. The ultimate goal for the clinician is to form a clear picture of the patient's pre-morbid level of financial functioning in order to select appropriate assessment measures and to draw meaningful conclusions regarding the patient's overall current financial capacity in relation to his/her living circumstances and associated environmental demands.

Self and Informant-Based Assessment

The self and informant report approach to financial assessment involves gathering data about a person's real-life financial functioning through self-report, collateral report, or both. Ideally, the informant can provide information about a person's prior optimal levels of financial skill, how financial functioning may have changed over time, as well as about current financial activities and skills. The primary advantages of self and informant report are the potential ecological validity of the information received and the relative ease of administration and minimal cost of obtaining such functional information. In current clinical practice and research settings, most information regarding financial functioning is derived from patient and collateral report, whether obtained during a standard clinical interview or through a questionnaire/report form.

Detailed questionnaires of financial functioning are not widely available. Most functional inventories assess a broad spectrum of basic and advanced activities of daily living, and include only a very limited review of financial abilities. One of the earliest functional report forms was the Lawton & Brody Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969), which included one finance item asking about

the respondent's independence in financial matters such as paying bills, making purchases, or handling money. The Blessed Dementia Scale, another early survey of functional and behavior change, included just one question related to finances, "Inability to cope with small sums of money" (Blessed, Tomlinson, & Roth, 1968). The Functional Assessment Questionnaire (FAQ), a more recent clinician-administered measure, includes two financial items among its ten functional questions: "writing checks, paying bills, balancing checkbook" and "assembling tax records, business affairs, or papers" (Pfeffer, Kurosaki, Harrah, Chance, & Filos, 1982). In general, although surveys of instrumental activities of daily living frequently reference overall financial functioning, they rarely include more than one or two specific financial items. In addition, a self-report or informant questionnaire is usually not standardized or norm referenced, and thus results cannot be generalized easily across patients and settings. Finally, the questionnaire approach is further limited by patient anosognosia (a neurologically based deficit in a patient's awareness of having a neurodegenerative disorder and of its effects on their cognition and everyday functioning) and informant report biases affecting the accuracy of financial information received (Wadley et al., 2003). For example, our group found that both patients with AD and their family caregivers had difficulty making reliable estimations of patients' financial abilities. Patients with AD overestimated their financial abilities due to their increasing anosognosia, while family member estimates were more accurate but showed problems with judgment reliability over short time periods, possibly due to the stresses of caregiving (Wadley et al., 2003).

Performance-Based Assessment

Performance-based instruments directly assess functional abilities in a clinical or laboratory setting. These instruments ask individuals to

perform a series of conceptual and pragmatic tasks similar or equivalent to those performed in home and community settings. Performance-based measures are standardized, quantifiable, repeatable, and norm referenced, and thus results can be generalized across patients and settings. Performance-based assessment of financial abilities may be included as part of a global functional status assessment, or financial skills may be explored alone or in greater detail with specific financial capacity instruments.

A distinct advantage of an objective performance measure is the freedom from subjective reporter bias. Performance-based instruments can provide information that is more objective and frequently more reliable than third-party observations or examinees' self-reports. Thus, a person's performance on specific financial tasks can illuminate possible concerns with the reliability of patient and informant reports, and be highly relevant to diagnostic formulations and treatment recommendations. In addition, the findings from these measures are often much more precise and granular than patient and collateral reports. For example, change over time can be evaluated with much more precision using repeated performance-based measures, and magnetic resonance imaging (MRI)-based brain metrics have recently been successfully analyzed in relation to performance-based measures of financial capacity (Griffith et al., 2010; Kerr, Bartel, McLaren, & Marson, 2014; Stoeckel et al., 2013).

There are also weaknesses to performance-based measurement of financial capacity. One issue is the requirement for a specialized measure and materials, and a trained administrator, which together make performance instruments more challenging, expensive, and time-consuming to administer. A second and key issue is ecological validity, as tasks are completed in clinical or laboratory settings and not real-world home and community settings (ABA/APA Assessment of Capacity in Older Adults Project Working Group, 2008). In

general, performance-based instruments provide good evidence of adequate reliability, but there is less empirical evidence regarding the predictive validity of each scale in terms of real-world functioning (Moore, Palmer, Patterson, & Jeste, 2007). Measures conducted in a laboratory or clinical office setting cannot take into account either the contextual cues or distractions within the home environment that may assist or interfere with a person's abilities to perform everyday financial tasks. Successful performance on direct performance measure may demonstrate ability under controlled and potentially optimal conditions, but may not always accurately predict actual everyday functioning. Ultimately, it is the ability of patients to engage in self-initiated instrumental activities in home and community environments that is critical for their independence.

One example of a performance-based measure dedicated to assessment of financial capacity is the FCI (Marson et al., 2000). The FCI is a standardized psychometric measure designed specifically to assess everyday financial activities and abilities in older adults with MCI and dementia. The FCI is based on the aforementioned conceptual model that views financial capacity at three levels (Table 19.1): specific financial abilities (tasks), broader financial activities (domains) important to independent functioning, and overall financial capacity (global score) (Marson, 2001; Marson et al., 2000). The current version of the FCI (FCI-9) (Triebel et al., 2009) directly assesses financial abilities across the 18 tasks, nine domains, and two global scores of the model (Table 19.1). The FCI tasks range from testing basic skills such as naming and counting coins/currency, and making one-item grocery purchases, to more complex skills such as managing a checkbook and register, managing a bank statement, and preparing bills for mailing. The first global score measures overall performance across the first seven FCI domains: basic monetary skills, financial conceptual knowledge, cash

transactions, checkbook management, bank statement management, financial judgment, and bill payment. Two additional optional domains of the FCI are knowledge of personal assets/estate arrangements, and investment decision-making. The second global score measures overall performance across domains 1–7 and domain 9 (Table 19.1).

Trained technicians administer and score the FCI, and administration time is about 50 min for cognitively normal older adults and 60+ min for patients with MCI and dementia. Scoring of task, domain, and global performance is performed according to a standardized scoring system which is norm referenced based on performance of cognitively normal older adults. The FCI has demonstrated good internal, test–retest, and inter-rater reliabilities, as well as good content and construct validity (Marson, 2001; Marson et al., 2000). The FCI has been used in a range of research studies involving older adults with MCI and AD (Griffith et al., 2003; Marson, 2001; Marson et al., 2000; Martin et al., 2008; Sherod et al., 2009; Triebel et al., 2009), Parkinson’s disease (Martin et al., 2013), and more recently patients with TBI (Dreer et al., 2012; Martin et al., 2012).

Clinical Interview Assessment of Financial Capacity

As noted above, financial capacity may also be directly assessed by a clinician using a specialized clinical interview. In addition to clinical interview questions, such an interview can include the semi-structured examination of specific performance skills. However, it remains distinct from formal performance-based instruments that require standardized administration, a trained psychometrician, and more intensive materials and stimuli. Clinical interview approaches also differ in that they do not generally yield quantitative scores, but rather categorical impairment ratings reflecting the

clinician’s judgments regarding a patient’s various skill levels (e.g., capable/intact, marginally capable/marginally impaired or incapable/impaired). Such categorical outcomes have clinical utility, as they logically connect to issues of capacity and capacity outcome, and can be more readily understood and applied by other clinicians and professionals than informant ratings or quantitative performance scores. Our group has developed a conceptually based clinical interview assessment measure called the Semi-Structured Clinical Interview for Financial Capacity (SCIFC), which has been used in MCI and AD patient research (Marson et al., 2009).

EMPIRICAL STUDIES OF FINANCIAL CAPACITY

In this section, we discuss existing empirical research studies on financial capacity in older adults. As noted until recently there were few, if any, studies in this area. As reflected below, most of the work to date has been conducted in older adults with MCI and AD (Griffith et al., 2003; Marson, 2001; Marson et al., 2000; Martin et al., 2008; Sherod et al., 2009; Triebel et al., 2009), with a few additional studies conducted in populations with Parkinson’s disease (Martin et al., 2013), TBI (Dreer et al., 2012; Martin et al., 2012), and severe mental illness (Barrett et al., 2009; Patterson, Goldman, McKibbin, Hughs, & Jeste, 2001).

Financial Capacity in Patients with Mild and Moderate AD

Over the last decade or so, a number of studies using the FCI have investigated financial capacity in patients with AD (Marson, 2001; Marson et al., 2000). The original FCI (FCI-6) assessed six domains and 14 tasks (Marson et al., 2000) (the global level was introduced in later versions of the FCI). In an initial study

(Marson et al., 2000), mild AD patients on the FCI-6 performed equivalently to control subjects on the basic monetary skills domain, but significantly below cognitively normal older adults on the other five domains. Moderate AD patients performed significantly below controls and mild AD patients on all domains. On the FCI-6 tasks, mild AD patients performed equivalently to cognitively normal older adults on simple tasks such as naming coins/currency, counting coins/currency, understanding parts of a checkbook, and detecting the risk of mail fraud. Mild AD patients performed significantly below older controls on more complex tasks such as defining and applying financial concepts, obtaining change for vending machine use, using a checkbook, understanding and using a bank statement, and making an investment decision. Moderate AD patients performed significantly below cognitively normal older adults and mild AD patients on all tasks (Marson, 2001; Marson et al., 2000, 2011).

Using a cut-score method derived from performance of cognitively normal older adults (Marson, 2001; Marson et al., 2000), the quantitative performance of the AD patients was translated into categorical outcomes (capable, marginally capable, incapable) on each domain. In the context of a prototype instrument and small control sample, our group advised that these outcomes should be interpreted cautiously. However, mild AD patients demonstrated an interesting pattern of categorical impairment across the domains. Less than 30% of mild AD patients achieved “capable” outcomes on complex domains of checkbook management and bank statement management, and less than 15% were found capable on the domain of financial judgment. Moderate AD patients, in turn, demonstrated very high rates of “incapable” outcomes on all FCI domains (range 90–100%). The relationship of the AD patients’ dementia level to their

capacity outcomes was statistically robust for all domains (Marson et al., 2000, 2011).

To our knowledge, this was the first empirical study of financial capacity in patients with AD, and possibly the first empirical study specific to financial skills in any clinical population (Marson, 2001). The findings suggest that significant impairment of financial capacity occurs in AD, even in the mild dementia stage. Mild AD patients appear to experience significant deficits in complex financial abilities (tasks) and some level of impairment in almost all financial activities (domains). Moderate AD patients appear to experience loss of both simple and complex financial abilities and show severe impairment across all financial activities. Based on these initial findings, Marson proposed two preliminary clinical guidelines for the assessment of financial capacity in patients with mild and moderate AD (Marson et al., 2000) (p. 883):

1. *Mild AD patients are at significant risk for impairment in most financial activities, in particular complex activities like checkbook and bank statement management. Areas of preserved autonomous financial activity should be carefully evaluated and monitored.*
2. *Moderate AD patients are at great risk for loss of all financial activities. Although each AD patient must be considered individually, it is likely that most moderate AD patients will be unable to manage their financial affairs.*

Longitudinal Change in Financial Capacity in Patients with Mild AD

A longitudinal study by Martin et al. (2008) using the FCI-9 showed that financial capacity declines rapidly in patients with mild AD over a 1-year period. Financial capacity was assessed at baseline and 1-year follow-up in cognitively normal older adults and individuals with AD. Baseline results from this study replicated prior cross-sectional findings (Griffith et al., 2003;

Marson et al., 2000) and indicated that patients with mild AD exhibit widespread financial deficits relative to same-aged cognitively intact peers. At 1-year follow-up, mild AD patients exhibited marked declines in overall financial capacity and on the majority of FCI domains. In contrast, the cognitively normal older adults exhibited intact and stable FCI performance over the course of the study. Overall, the mild AD group exhibited a 10% decline in FCI score over 1 year from their original baseline performance relative to controls (Marson et al., 2011; Martin et al., 2008).

Financial Capacity in Patients with MCI

Financial capacity has also been investigated in patients with MCI. As noted above, MCI represents an intermediate and often transitional phase between normal cognitive aging and dementia (Petersen et al., 2001). In addition to focal cognitive impairment not normal for age, patients with MCI can show clear impairment in instrumental activities of daily living over time (Daly et al., 2000; Griffith et al., 2003; Marson et al., 2011; Petersen et al., 2001; Ritchie, Artero, & Touchon, 2001), although this functional impairment does not reach a level warranting a dementia diagnosis. In an initial study, financial capacity was assessed using the expanded FCI-9 in cognitively normal older adults, amnesic MCI (aMCI) patients, and mild AD patients (Griffith et al., 2003). We found that at the task level, cognitively normal older adults performed significantly better than the aMCI group on tasks of applying financial concepts, understanding and using a bank statement, understanding bills, and preparing bills for mailing. There were no tasks on which the aMCI group performed better than cognitively normal older adults. The aMCI group, in turn, demonstrated significantly higher scores than the mild AD group on tasks of understanding and applying financial concepts, using a

vending machine, understanding and using a checkbook, understanding and using a bank statement, prioritizing bills, and preparing bills for mailing. As expected, cognitively normal older adults performed significantly better than the mild AD group on most financial abilities, with the exception of simple tasks of basic monetary skills, cash transactions, and telephone fraud (Griffith et al., 2003; Marson et al., 2011).

At the broader domain level, cognitively normal older adults also performed significantly better than the aMCI group on the domains of financial concepts, checkbook management, bank statement management, financial judgment, and bill payment. There were no domains on which the aMCI group performed better than cognitively normal older adults. In turn, the aMCI group performed significantly better than mild AD patients on all domains except financial judgment and knowledge of assets and estate arrangements. Cognitively normal older adults performed significantly better than mild AD subjects on all domains except knowledge of assets and estate. For global financial capacity (sum of FCI domains 1–7), cognitively normal older adults performed significantly better than both aMCI and AD participants, and aMCI participants performed significantly better than AD participants (Griffith et al., 2003).

This study represents one of the first published reports of performance-based evidence for functional decline and capacity loss in patients with aMCI. Using a direct assessment approach, patients with aMCI demonstrated significant, albeit mild, deficits on some (but not all) financial abilities compared to age, education, gender, and racially matched healthy controls. Compared to cognitively normal older adults, aMCI patients showed a negative differential of 1.74SD units in overall financial capacity, while mild AD patients showed a negative differential of 4.52SD units. These results indicate that initial declines in financial capacity

are already present in the MCI phase prior to the development of a frank dementia (Griffith et al., 2003; Marson et al., 2011).

Financial capacity has also been shown to decline in a subset of aMCI patients who converted to AD over a 1-year period (Triebel et al., 2009). Using the FCI-9, this longitudinal study investigated FCI change in relation to MCI patients' conversion from aMCI to dementia. Performance on the FCI domains and global scores was compared within and between groups of cognitively healthy controls, MCI patients who converted to Alzheimer-type dementia (aMCI converters), and MCI patients who did not convert to dementia (aMCI non-converters). These analyses revealed significant group differences on FCI variables and also group-by-time interactions.

As shown in Table 19.2, controls at baseline performed better than MCI converters and non-converters on almost all FCI domains and on both FCI total scores, replicating prior cross-sectional findings in patients with aMCI (Griffith et al., 2003), and indicating that impairment of financial capacity in aMCI was already present prior to baseline assessment (Triebel et al., 2009). At 1-year follow-up, aMCI converters showed decline relative to controls and aMCI non-converters for checkbook management and for both FCI total scores. A strong trend emerged for bank statement management. aMCI converters showed declines in procedural skills associated with checkbook management and bank statement management, such as calculating the correct balance in a checkbook register, highly consistent with the arithmetic errors previously noted as a clinical "warning sign" of financial decline (Triebel & Marson, 2012). Interestingly, declines did not occur in the conceptual understanding of a checkbook or a bank statement. This study indicated that declining financial skills are detectable in patients with aMCI in the year prior to conversion to AD (Triebel et al., 2009).

Neuropsychological Predictors of Financial Capacity

Neuropsychological studies afford the opportunity to identify cognitive abilities that are associated with and likely driving changes in financial capacity in different neurocognitive disorders. Given the limited research on financial capacity as a construct, and limited number of available assessment instruments, there have been correspondingly few neuropsychological studies to date of financial capacity (Marson et al., 2011). A study by our group using the FCI examined cognitive predictors of financial capacity in a sample of cognitively normal older adults, patients with aMCI, and patients with mild AD (Sherod et al., 2009). The study goal was to develop and compare multivariate cognitive models of financial capacity across the continuum from normal aging to dementia. Robust cognitive models of financial capacity emerged for each of the three groups. Written arithmetic skill (WRAT-3 Arithmetic) was the primary predictor of financial capacity across all three models, accounting for 27% of variance in the older control model, 46% in the mild AD model, and 55% in the aMCI model (Sherod et al., 2009). Visuomotor tracking/executive function (Trails A/B) was a secondary cognitive predictor of financial capacity across the two patient models. Short-term verbal memory and visuomotor tracking/executive function were secondary predictors for the normal aging group. This study demonstrated that very similar neurocognitive predictor models of financial capacity exist across the dementia spectrum of normal cognitive aging, MCI, and mild AD (Sherod et al., 2009). In particular, the findings strongly implicated written arithmetic skills as a critical cognitive function subserving financial skills and capacity in normal cognitive aging, as well as in prodromal and clinical AD (Sherod et al., 2009; Mackin & Arean, 2009).

TABLE 19.2 One Year Change in FCI Domain and Global Domain Variables Across Older Control, MCI Non-Converter, and MCI Converter Groups

	Range	Older controls		MCI non-converters		MCI converters		Baseline ^a	Interaction ^b
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2		
		n=76	n=76	n=62	n=62	n=25	n=25		
D1. Basic monetary skills	0–34	32.1(2.7)	32.7(2.3)	30.6(3.8)	30.3(3.9)	29.2(4.7)	28.4(5.6)	<0.001 ^c	0.064
D2. Financial concepts	0–32	29.3(2.5)	29.9(2.1)	27.9(4.0)	27.5(4.5)	24.9(5.7)	24.7(5.6)	<0.001 ^d	0.174
D3. Cash transactions	0–24	21.7(2.0)	21.7(2.2)	20.5(3.0)	19.9(3.3)	18.7(4.7)	17.6(4.7)	<0.001 ^d	0.134
D4. Checkbook management	0–50	48.2(2.7)	48.2(2.6)	46.9(3.6)	47.0(3.8)	44.6(6.1)	40.8(7.9)	<0.001 ^c	0.001 ^e
D5. Bank statement management	0–39	35.4(3.1)	34.7(3.3)	31.9(5.4)	31.6(6.0)	28.0(6.8)	24.9(9.5)	<0.001 ^d	0.021
D6. Financial judgment	0–16	13.9(2.4)	14.7(1.6)	13.9(2.9)	14.1(2.9)	12.5(2.8)	12.4(3.6)	0.002 ^e	0.190
D7. Bill payment	0–46	44.4(2.4)	43.9(4.0)	40.2(6.2)	41.3(6.1)	35.8(9.0)	33.5(10.6)	<0.001 ^d	0.124
D9. Investment decision making	0–17	14.3(2.4)	14.5(2.4)	12.9(3.1)	12.2(3.3)	11.6(4.4)	10.5(4.4)	<0.001 ^c	0.056
FCI Global (D1–7)	0–241	225.0(9.9)	225.9(1.9)	212.0(20.9)	211.5(22.2)	193.7(29.6)	182.3(39.0)	<0.001 ^d	0.002 ^e
FCI Global (D1 – 7 + 9)	0–258	239.3(10.9)	240.4(13.0)	224.9(22.8)	223.7(24.2)	205.3(32.4)	192.8(42.3)	<0.001 ^d	0.001 ^e

Adapted from and reprinted with permission from [Triebel et al. \(2009\)](#), the American Academy of Neurology.

Note: MANCOVA (age entered as covariate) was the statistic employed.

^ap value of baseline group comparison on FCI variables between controls, MCI non-converters, and MCI converters.

^bp value of time × diagnostic group interaction over 1 year on FCI variables between control, MCI non-converter, and MCI converter groups.

^cControls > MCI non-converters, MCI converters.

^dControls > MCI non-converters > MCI converters.

^eMCI converters showed greater decline compared to controls and MCI non-converters.

NEUROIMAGING STUDIES OF FINANCIAL CAPACITY

Neuroimaging Approaches to Studying Financial Capacity

Neuroimaging research represents an exciting new form of scientific inquiry into financial capacity and aging (Knight & Marson, 2012). Although in its infancy, imaging research provides the important scientific opportunity to link together brain networks, brain activity, and brain structure with cognition and everyday function, in order to understand financial capacity in cognitively normal older adults, and also impairment and eventual loss of financial capacity in patients with neurodegenerative diseases like AD.

Positron emission tomography (PET) and MRI are two non-invasive neuroimaging modalities which can provide insight into brain micro- and macro-structure and brain networks that underlie financial capacity. PET imaging uses radiotracers to measure brain function (e.g., glucose utilization through fluorodeoxyglucose (FDG)) (Alavi et al., 1986; Raichle & Mintun, 2006) and molecular/protein localization (e.g., amyloid through AmyVid or Pittsburgh Compound B (PiB) (Rowe & Villemagne, 2013) and hyperphosphorylated tau through [18-F]-T807 (Chien et al., 2013)). Functional MRI (fMRI) is a non-invasive scan that measures changes in the blood-oxygen level-dependent (BOLD) signal when individuals are resting or performing a task (Raichle & Mintun, 2006). Structural MRI can be used to measure numerous anatomical features in brain relevant to everyday function, including cortical thickness, gray or white matter volume, white matter hyperintensities, iron deposition, and white matter microstructure.

Critical to understanding the neural basis of financial capacity is the appreciation that financial capacity is a complex multidimensional construct, which presumably draws upon

numerous brain networks and cortical hubs, and associated cognitive processes, including arithmetic skills, semantic knowledge, reasoning, and judgment (Knight & Marson, 2012). Accordingly, it is important to identify specific brain networks and regions, which may underlie cognitive subcomponents within the construct, and hypothesize how compromised brain structure and function in these networks and regions can lead to cognitive and ultimately functional (financial) impairment. Current neuroimaging research examining financial capacity has focused on the brain's default-mode network (DMN), based on its role in episodic memory, arithmetic operations, financial judgments, and engagement in internal thought (Greicius, Krasnow, Reiss, & Menon, 2003; Gusnard, Akbudak, Shulman, & Raichle, 2001; Raichle et al., 2001; Raichle & Snyder, 2007), as well its preferential vulnerability to Alzheimer-type neuropathology (Buckner, Andrews-Hanna, & Schacter, 2008; Buckner et al., 2009). The DMN includes the neuroanatomical regions of the medial temporal lobe, predominantly the parahippocampal gyrus; posterior cingulate/ventral precuneus; medial prefrontal cortex; lateral temporal lobe; and inferior parietal lobule which includes the angular gyrus.

Neuroimaging Studies of Financial Capacity in aMCI and AD

Our group has recently used structural imaging and the FCI to begin to understand the neural basis of impaired financial skills in patients with aMCI and AD. In one study, MRI gray matter volume in the angular gyrus was the sole predictor of FCI score in a sample of aMCI patients, accounting for 19% of variance (Griffith et al., 2010). In addition, WRAT-3 written arithmetic score was a partial mediator of the angular gyrus-FCI score relationship. The findings were both intriguing and neurologically persuasive as the volume of angular

gyrus, a neuroanatomical region that subserves numeracy and higher-order arithmetic functions in brain, was linked to financial capacity in patients with prodromal AD (Griffith et al., 2010). In a follow-up study, our group found a relationship between gray matter volumes in DMN regions (such as medial frontal lobes, angular gyrus, and precuneus) to FCI performance in mild AD patients (Stoeckel et al., 2013). In this second study, attentional abilities mediated the relationship between the medial frontal lobes and FCI performance (Stoeckel et al., 2013). To our knowledge, these two studies are the first to have used structural MRI to identify neural substrates and associated cognitive functions linked to financial capacity in patients with well-characterized neurodegenerative disease.

Neuroimaging Studies of Financial Decision Making in Cognitively Normal Older Adults

Other groups have recently used neuroimaging techniques to better understand the financial decision-making of cognitively normal older adults. For example, fMRI has been used to investigate which brain regions or networks underlie financial risk-taking and the balancing of risk and reward (Wu, Sacchet, & Knutson, 2012; Samanez-Larkin, Kuhnen, Yoo, & Knutson, 2010; Samanez-Larkin, Wagner, & Knutson, 2011). A meta-analysis revealed that the ventral striatum is activated during decisions involving large gains, whereas the anterior insula is activated when there is high variance associated with the outcome of the decision (Wu et al., 2012). A related study concluded that activation of ventral striatum is associated with a risk-seeking choice, such as a financial decision to gamble at a casino, where potential gains are viewed to outweigh potential losses. In contrast, activation of the anterior insula is associated with risk-averse choices, such as a financial decision to purchase insurance (Kuhnen &

Knutson, 2005). Consistent with these findings, increased variance in the activity of the ventral striatum was associated with riskier choices in older adults (Samanez-Larkin et al., 2010). Further research revealed that providing explicit information about the expected value of the decision could diminish riskier choices (Samanez-Larkin et al., 2011).

Studies of patients with brain lesions can also reveal neuroanatomical regions that potentially support financial capacity in older adults. Two recent studies have implicated the ventral medial prefrontal cortex as neuroanatomical areas necessary, although not sufficient, for sound financial judgments and understanding of financial concepts (Asp et al., 2012; Krajbich, Adolphs, Tranel, Denburg, & Camerer, 2009). Lesions in this area lead to increases in gullibility and a propensity for individuals to be misled by advertisements, which are forms of impaired financial judgment (Asp et al., 2012). Lesions to this area were also associated with persons having difficulty considering and comparing discordant facts, as well as lacking concern and guilt about the consequences of their decisions on others (Krajbich et al., 2009). Non-lesional whole-brain studies have also yielded insights. In a structural MRI study using voxel-based morphometry, lower gray matter volume in the striatum was associated with poor financial decisions and judgments (Ramchandran, Nayakankuppam, Berg, Tranel, & Denburg, 2011).

Summary

Neuroimaging has the potential to identify the brain networks and cortical regions that underlie financial decisions, and financial capacity as a whole, in both cognitively normal and abnormal older adults. Despite the infancy of this area, promising initial findings are emerging. First, gray matter volumes in regions of the DMN are related to performance on a measure of financial capacity (FCI) in patients with both prodromal and clinical AD,

and these relationships are mediated by plausible cognitive mechanisms. Second, mesolimbic structures appear to be central to identification of the expected value of financial decisions and understanding/integrating financial concepts in cognitively normal elderly. With continuing research the field will be better able to understand the complex relationships between brain network disruption, cortical gray matter volume loss, and cognitive deficits, and how these processes impact complex downstream functional abilities such as financial capacity.

NON-COGNITIVE CONTRIBUTIONS TO FINANCIAL CAPACITY IN AGING

Up to this point, we have focused on cognitive disorders and their effects on financial capacity in aging. While arguably the preeminent predictor of financial capacity in aging, cognition by itself cannot explain all of the variance observed in the measurement of financial capacity, nor can it account for all instances of financial behavior in everyday life. Consistent with this view, our group has reported that neurocognitive predictors only account for between 25% and 65% of the variance in FCI performance across normal aging, MCI, and AD groups (Sherod et al., 2009). This finding emphasizes the importance of identifying other sources of variance contributing to older adults' financial capacity in everyday life. Both the American Bar Association and American Psychological Association have actively encouraged examinations into non-cognitive factors, such as social and cultural influences, that affect capacity in aging (Pinsker, Pachana, Wilson, Tilse, & Byrne, 2010). In this next section, we describe potential contributions of non-cognitive factors: psychological and psychiatric disorders and symptoms, physical dependency and/or medical frailty, cultural and social norms, and resilience.

Psychological and Psychiatric Contributions to Financial Capacity

It is well known that psychiatric disturbances of thought, mood, and personality can impact the capacity to perform everyday financial activities (Frank & Degan, 1997; Marson et al., 2006). Numerous psychological and psychiatric factors, whether chronic, acute, or even subclinical, can influence an individual's perception of financial control and ability to make financial decisions and carry out related tasks. For example, individuals with intact cognition but depressive symptoms can lack motivation and be apathetic towards personal financial decisions and activities, which could result in diminished financial capacity. Indeed, higher rates of impaired financial capacity have been observed in individuals with late-life depression (LLD) compared to non-depressed individuals (Mackin & Areal, 2009). This study also found that 22% of the LLD individuals had clinically impaired financial capacity and that, after controlling for age and education, attention and executive functioning accounted for only 27% of the variance in financial capacity.

A clear example of psychiatric illness impairing financial skills can be seen in schizophrenia. Although schizophrenia clearly involves cognitive impairment as a core deficit (Gold and Harvey, 1993), it also involves a range of non-cognitive disturbances of thought, perception, affect, and social judgment (Dworkin, 1992) that can adversely impact financial skills and capacity. Patterson and colleagues examined financial capacity in psychiatric populations as part of a broader assessment of functional abilities using the UCSD Performance-Based Skills Assessment (UPSA) (Patterson et al., 2001). The study revealed that patients with schizophrenia or schizoaffective disorder performed significantly below controls on all five domains of the UPSA, including the financial domain. The UPSA is now an established part of many clinical trials in schizophrenia and related mental

disorders. A more recent study demonstrated that the Direct Assessment of Functional Status (DAFS) scale, as compared to the MMSE, was better at classifying diminished financial capacity in severely mentally ill individuals (Barrett et al., 2009). The authors concluded that the DAFS financial skills subscale could be used by clinicians to assess financial capacity of individuals with severe mental illness. Patients with schizophrenia and severe mental illness also frequently have problems with both basic and complex financial skills, including budgeting expenses on a fixed income and selecting representative payees (Marson et al., 2006). Thus schizophrenia is paradigmatic in illustrating how severe psychiatric illness can impair financial capacity.

Research into the relationship between substance abuse and financial capacity is very limited. However, research has shown a temporal relationship between receiving entitlement benefits and drug relapse, suggesting that substance abuse is often associated with impairment in financial judgment (Shaner et al., 1995). Specifically, patients with substance abuse disorders often rapidly dissipate governmental and other financial benefits, rather than budgeting them to support themselves and family members until the next monthly disbursement (Frank & Degan, 1997; Rosen et al., 2002a, 2002b; Shaner et al., 1995; Marson et al., 2006). The inability of many substance abuse patients adequately to manage their finances has led to calls for alternative disbursement approaches such as mandatory representative payees (Grossman et al., 1997; Rosen et al., 2002a, 2002b).

Anxiety, or excessive worrying, is another psychiatric condition that can impair higher-order functional abilities such as financial capacity. Anxiety has generally been shown to be maladaptive and can lead to feelings of helplessness, a lack of focus, and a lack of attention in decision-making including financial decision-making (Pinsker et al., 2010; Barlow, 2004).

Finally, in addition to impairing financial skills, neuropsychiatric disorders can also impair an individual's awareness of his/her own cognitive and functional impairment (anosognosia). For example, one study has shown that individuals with MCI overestimated their abilities in routine financial skills (Okonkwo et al., 2008). Interestingly, severity of cognitive impairment was related to overestimation of financial abilities by patients with MCI, while depressive-like symptoms were related to underestimation of financial abilities (Okonkwo et al., 2008).

Relationship of Physical Dependence/ Medical Frailty to Financial Capacity in Aging

Physical dependence, defined as physical frailty, medical frailty, and/or physical limitations from aging or medical conditions/issues, is also an important non-cognitive factor affecting financial capacity in the elderly (James, Boyle, & Bennett, 2014; Shulman & Faierman-Shulman, 2000). Physical frailty can impair a person's ability directly to carry out financial activities, by placing limitations on their ability to carry out and communicate financial decisions. An individual suffering a speech impediment from a stroke may no longer be able effectively to communicate their financial wishes, even when internal mental financial knowledge may be intact. Severe arthritis may render an individual incapable of simply writing a check or balancing a checkbook. A legion of physical ailments can effectively imprison the elderly in their homes, rendering them unable to make routine financial purchases, such as groceries, without assistance. The most common of these physical maladies include arthritis, rheumatism, heart disease, neuropathies, and osteoporosis. Arthritis, rheumatism, and heart conditions account for half of all medical issues physically limiting the activity of older adults (Quinn & Tomita, 1986).

These medical conditions can impair financial judgment and decision-making independent of frank cognitive impairment. Physical dysfunction and frailty have long been identified as factors that predispose the elderly to financial exploitation (Hall, Hall, & Chapman, 2005). A recent study looked at different risk factors for susceptibility to financial scams in a group of 639 community-dwelling older adults without dementia (James et al., 2014). In bivariate analyses, susceptibility to scams was positively correlated with frailty—as measured by grip strength, timed walk, body composition, and fatigue. In addition, the need for environmental and family support for daily living activities, including handling money, can predispose an individual to elder abuse and financial exploitation (Hall et al., 2005; Shulman & Faierman-Shulman, 2000).

Cultural and Social Contributions to Financial Capacity in Aging

An individual's exercise of financial capacity and decision-making occurs within a broader social and cultural context. Factors such as family, race, culture, gender, ethnicity, and others interact to help shape and influence an individual's financial capacity, decision-making, and vulnerability to exploitation (Sanchez, 1996). Consideration of such contextual factors in the decision-making process has been underrepresented in the capacity research arena generally and also the law. For example, the Mental Capacity Act of the United Kingdom was drafted as essentially context-blind and views decision-making of all types as solely a cognitive process (Mental Capacity Act Code of Practice, 2005).

The family provides an important context for protecting and preserving an older adult's financial capacity. A positive support network of family and friends is vital to detecting early cognitive problems and protecting an impaired

older adult from his/her own declining financial decision-making, and from potential financial exploitation and abuse. In a recent study involving 639 community-dwelling older adults without dementia, social support was significantly negatively correlated with elders' susceptibility to scams (James et al., 2014). Not surprisingly, an early sign of the presence of undue influence is an uncharacteristic isolation of the individual from family, friends, community, and other stable relationships (Hall et al., 2005). In addition, recovery of older adult victims of undue influence is associated with strong support networks of trustworthy family members and social contacts.

At the same time, family members are unfortunately also the individuals most likely to financially exploit an older adult. As many as one third of all cases of financial abuse or exploitation involve a perpetrator who is a family member or close family friend, and who feels entitled to take funds because of their relationship with the older adult (Tueth, 2000). Most often the abuser is a male relative living with the victim, who takes advantage of specific areas of impairment or vulnerability, such as physical frailty or loneliness, to isolate and exploit the individual (Shulman & Faierman-Shulman, 2000). In addition to being a family member or close family acquaintance, perpetrators often have psychiatric and psychological problems, including a personality disorder and/or a history of mental illness or substance abuse (Hall et al., 2005; Homer & Gilleard, 1990; Paris, Meier, Goldstein, Weiss, & Fein, 1995; Quinn, 2002; Shulman & Faierman-Shulman, 2000; Tueth, 2000). Similar characteristics are found in female perpetrators, such as antisocial personality and longstanding histories of psychological dysfunction in relationships (Hall et al., 2005; Homer & Gilleard, 1990; Paris et al., 1995; Quinn, 2002; Shulman & Faierman-Shulman, 2000; Tueth, 2000). As noted above, these co-morbid characteristics of perpetrators

are not unexpected, as financial mismanagement and poor money skills are commonly associated with psychiatric disability, and are often ranked as a target area for intervention with respect to recovery goals (Elbogen, Tiegreen, Vaughan, & Bradford, 2011). Addiction and financial mismanagement also co-occur frequently in perpetrators, possibly due to elevated delay discounting (Hamilton & Potenza, 2012).

The effect of cultural expectations on the family dynamic is important to consider. The family issues noted above in financial exploitation have been most frequently researched with respect to white middle-class individuals, with less attention to minorities. Family dynamics and cultural expectations can work together to shape financial capacity and exploitation in minority populations in ways that do not reflect the current research literature (Sanchez, 1996). Cultural expectations and exploitation can be difficult to distinguish without assessment of minority family dynamics including the nature of interactions, exchanges, and expectations (Sanchez, 1996). For example, in a study of Mexican American elderly, some familial interactions appeared exploitative through traditional screening criteria but were not perceived by participants as such. The participants instead understood these interactions as “rooted in familial and cultural expectations of exchange and support of the family and larger community” (Sanchez, 1996, p. 55).

In addition to family dynamics, factors of race and gender can also impact financial capacity in aging. A study by our group examining racial disparities in financial capacity among patients with aMCI revealed that basic academic math skills, related to educational opportunity and quality of education, accounted for a substantial proportion of the group differences in financial performance (Triebel et al., 2010). Social factors, including gender, have also been found to influence financial decision-making. A study looking at

older adults without dementia showed that within households, men with relatively higher education than their spouse make more financial decisions and have higher financial literacy (Boyle et al., 2013). Additionally, despite the notion that people with dementia are often viewed as “ungendered,” another study looking at the effects of gender in older adults with dementia demonstrated how women and men with dementia exhibit gendered agency (Boyle, 2013; Davis, 1991). Although women and men with dementia were both more likely to be involved in financial management when they had undertaken this role prior to dementia onset, women with dementia were agreeable to their husband’s assumption of the household financial decision-making, while men with dementia were unwilling to relinquish their financial authority.

Resilience and Financial Capacity in Aging

Another non-cognitive factor contributing to financial capacity in aging is resilience—the ability to cope with and recover from stress and adversity (Eisenberg & Sulik, 2012). An individual’s ability to maintain financial capacity consistent with past levels of cognitive functioning is moderated in part by their financial and social resilience. Specifically, it is an individual’s capacity to perceive financial and social control, to identify controllable financial and social situations, and to exert financial and/or social control in everyday life that leads to their resilience (Chorpita & Barlow, 1998; Eisenberg & Sulik, 2012; Kumpfer, 1999; Maier, Amat, Baratta, Paul, & Watkins, 2006; Staudinger, Marsiske, & Baltes, 1995). In other words, if an older individual feels that they are in control of their finances, they are more likely to demonstrate a higher degree of financial capacity for a given level of cognitive functioning. The most direct evidence for this view comes from an analysis of the Health and

Retirement Study data, which revealed that “the ability to use knowledge and skills to manage one’s financial resources effectively for lifetime financial security” was inversely related to hopelessness (e.g., “I feel it is impossible for me to reach the goals that I would like to strive for”) (Murphy, 2013). While it is unclear whether hopelessness/helplessness (and consequent depression) impairs financial literacy and capacity, or impaired financial capacity causes hopelessness/helplessness and potentially depression, it appears that inescapable and/or negative financial and social situations will lead individuals to perform poorly financially or diminish their motivation to succeed, as described by the “learned helplessness theory” (Hiroto & Seligman, 1975). Not surprisingly, depressed individuals, who did not differ from non-depressed counterparts on demographic or neuropsychological measures, had lower levels of financial capacity (Mackin & Areal, 2009). In a different line of research, individuals with higher financial literacy tend to make more complex financial decisions (James, Boyle, Bennett, & Bennett, 2012), a likely illustration of the effect of perceived financial control. Another study revealed that individuals who consistently chose to avoid financial risk, even when accompanied by potential high reward outcomes (e.g., get \$15 vs. 50% chance of getting \$100), had lower financial literacy (Boyle, Yu, Buchman, & Bennett, 2012). In summary, feelings of financial helplessness, whether due to low financial literacy, confusion, and/or repetitive poor financial decisions, can lead to diminished resilience, which in turn can further diminish financial capacity.

FUTURE RESEARCH DIRECTIONS

In this concluding section to the chapter, we highlight four important future research directions for the emerging field of financial capacity in aging:

1. the detection of early financial declines in cognitively normal older adults;
2. the study of financial capacity in non-Alzheimer clinical aging populations;
3. the study of non-cognitive factors and financial capacity in aging;
4. understanding the evolving nature of financial capacity in our aging society.

Detecting Very Early Financial Declines in Cognitively Normal Elderly

As a result of cognitive aging, cognitively normal older adults are disproportionately vulnerable to declining financial skills and judgment, and also to undue influence by others. The widely reported case of undue influence involving Mickey Rooney is a well-publicized example (Fleck & Schmidt, 2011). Early detection of financial declines is the key to timely intervention and protection of these populations. However, very little is known about early decline of financial skills in cognitively normal older adults and the different trajectories of increasing vulnerability. Longitudinal studies of older adults using both existing and also novel metrics, such as task completion time, will provide insight into which aspects of financial capacity are most at risk during the earliest phases of cognitive aging. Models of the trajectory of these early financial declines might lead to “risk profiles” for declining financial capacity that could help families identify elders at risk well in advance of poor financial decisions or exploitation by others.

Study of Financial Capacity in Other Older Adult Clinical Populations

In this chapter we have focused on financial capacity in cognitively normal older adults and patients with MCI and AD. However, little scientific attention to date has been directed toward impairment and loss of financial

capacity in other clinical aging populations, including patients with frontotemporal dementia, vascular dementia, Parkinson's disease, late-onset schizophrenia, and related disorders. A recent study using the FCI examined financial capacity in Parkinson's disease patients with both prodromal (PD-MCI) and clinical dementia (PDD), and found that impairment in financial skills is present in PD-MCI and advanced in PDD (Martin et al., 2013). Broadening the clinical scope of financial capacity research will allow us to better understand how different neuropathologies, disease processes, and symptom presentations affect financial skills in the elderly.

Study of Non-Cognitive Contributions to Financial Capacity in Aging

A third area of future research is non-cognitive contributions to financial capacity in aging, such as mental illness, physical dependence and frailty, family systems and dynamics, and resilience. Financial capacity is a fundamental IADL critical to the autonomy of older adults, but the majority of scientific work conducted to date has focused narrowly on cognitive factors, with correspondingly little attention to the role and relevance of non-cognitive factors (Pinsker et al., 2010). However, study of these non-cognitive factors may hold particular promise for intervention, as in many cases they may be treatable or otherwise modifiable, in contrast to cognitive impairments secondary to neurodegenerative disease. By studying and understanding such non-cognitive factors, the field will be in a position to develop associated interventions to better support and protect the financial capacity of older adults.

Evolution of Financial Capacity in a Technological Society

A fourth area of future research is the changing form of financial capacity itself in contemporary modern society. The construct of

financial capacity is rapidly evolving in our modern technological society. In 25 years, it is possible that we may no longer use coins or paper money, and among older adults we are beginning to see a shift to online banking and increased use of credit cards, as has previously been observed in younger age groups. About 50% of American seniors are now internet users, and they comprise the fastest-growing online group (Zickuhr & Madden, 2012). The shift away from cash to a cashless society may actually increase, rather than decrease, the importance of financial capacity and its accurate assessment. Older adults may have difficulty visually scanning, and be easily confused by, complex graphical computer screen displays of their financial data, and be prone to associated errors. In addition, when older individuals make transactions with a credit card, they may be less aware of the costs and timeframes involved compared to cash transactions.

With the increasing availability and expectation of online financial activities, clinical research studies of financial capacity will accordingly need to evolve. However, to date little scientific attention has been devoted to the topic of online banking and internet-based financial activity. A recent study of community-dwelling older persons without dementia found that older adults who used the internet scored higher on a measure of global cognition, had less impairment on IADL measures, and made better health and financial decisions (James, Boyle, Yu, & Bennett, 2013). Future research should address the shift to a cashless society by examining the performance of both younger and older adults on online banking and other financial transactions.

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