

4626 #50

DEPARTMENT OF CORPORATIONS
Business Services and Consumer and Investor Protection

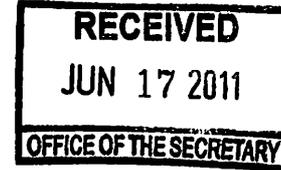


Preston DuFauchard
California Corporations Commissioner
Sacramento, California

IN REPLY REFER TO:
FILE NO: _____

June 13, 2011

RE: File Number 4-626



Elizabeth M. Murphy, Secretary
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, D.C. 20549-1090

Dear Ms. Murphy:

Attached are the California Department of Corporations comments on **Existing Private and Public Efforts to Educate Investors**, under Release No. 34-64306. We appreciate the opportunity to share information with the SEC as Dodd-Frank is implemented.

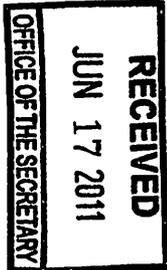
We have included three paper copies of our comments, with three full sets of our publications as attachments. Electronic pdf versions of our publications and program evaluations are available, if you prefer that format to upload them to the SEC's website.

Please feel free to contact me directly, via phone (916-327-7164) or e-mail (aroth@corp.ca.gov) should you have any questions.

Sincerely,

Andrew Roth, MPA
Director of Education and Outreach
California Department of Corporations

Enc.



(1) Have you attended, or does your organization operate, organize, sponsor, promote, or host, any investor education programs? Please describe the program, including its duration, target audience, and any measurable goals and objectives aimed at changing investor behavior. What specific topics are covered in its curriculum?

As California's securities regulator, the Department of Corporations' (DOC) mission includes "educating the public about the risks and rewards in investing and finances." The DOC, operates, organizes, sponsors, promotes and hosts a wide variety of investor education programs. Specific programs include the Seniors Against Investment Fraud (SAIF) and Troops Against Predatory Scams (TAP\$). The DOC also engages in collaborative efforts with local, state, and federal officials and organizations to provide investor education, financial consumer protection and financial literacy for all Californians. Attachment A includes copies of current DOC investor education publications; an article by Dr. Natalie Denburg (referenced below); and spreadsheets tabulating SAIF program evaluations (also referenced below).

A. Seniors Against Investment Fraud (SAIF)

Since seniors are the demographic group most heavily targeted for financial fraud, the main audience for SAIF consists of all Californians over the age of 50, of which there are approximately 10,000,000. SAIF began as a grant program funded in 2000 by the California Attorney General's Office of Criminal Justice Planning to protect seniors against telemarketing fraud by providing preventive education that utilized a peer-to-peer educational model. DOC contracted with community-based organizations (CBOs) such as Retired Senior Volunteer Programs (RSVPs) administered through county government offices. After the grant ended in 2004, the California Legislature approved continuing funding for the SAIF program.

Medical studies suggest that many older Americans may be susceptible to financial fraud and abuse because as brains age, some develop a mild level of cognitive impairment, which can affect the area of the brain involved in risk-taking decision-making. (See Dr. Natalie Denburg, et al's article "The Orbitofrontal Cortex, Real-World Decision Making, and Normal Aging", *Ann NY Acad Sci.* 2007 December; 1121: 480-498).

Consumer protection provides information to help consumers to understand the risks associated with investing, avoid unlicensed salespeople, unregistered or inappropriate products, or situations that involve high-pressure sales tactics, and recognize other warning signs of financial fraud. The main change in investor behavior sought by SAIF is to empower seniors to make safer, more informed decisions about investments at all levels.

Measurable goals and objectives include the number of SAIF presentations given by DOC staff; the number of SAIF publications distributed by the DOC and its partners; and the number of attendees. Spreadsheets tabulating years of SAIF presentation evaluations are included with this response packet.

The SAIF curriculum includes the following topics:

- Common Investment Scams
- Telephone Scams
- Other Common Scams
- Safeguarding Your Personal info
- Investor Self-Defense
- How to File a Complaint with the DOC
- Reverse Mortgages
- Annuity Purchases
- Financial Difficulties
- Elder Abuse and Financial Elder Abuse
- Preparing End-of-Life Paperwork
- Resource Guide
- "Check Before You Invest" Form

B. Troops Against Predatory Scams (TAP\$)

The TAP\$ program began in 2005 as a grant program funded by the Investor Protection Trust. After the grant ended in December 2009, the DOC continued to administer the program through its existing resources. Military servicemembers are frequent targets for financial fraud because they receive a guaranteed steady income, and are often young and unsophisticated about finances and investments. Financial readiness in all service branches is a priority for the US Department of Defense, a key TAP\$ partner, as financial problems are the most common reason for security clearance denials and revocations.

The target audience for TAP\$ is active-duty military servicemembers and their families stationed in California, and veterans and their families living in California. There are approximately 300,000 active-duty servicemembers and over 2,000,000 veterans in California, not including family members. To reach the TAP\$ audience, DOC partners with military relief societies such as Fleet and Family Services, veteran's groups and others to share distribution networks and serve as part of a statewide speakers bureau on important financial topics. DOC also partners with the Investor Protection Trust and FINRA along with other State and local government organizations that support active-duty servicemembers and veterans.

Since many military servicemembers and veterans, like many Americans, lack understanding of basic financial concepts, providing unbiased information about managing household finances is a key foundation for providing quality investor education information. TAP\$ promotes informed investor behavior by empowering servicemembers, veterans and their families to better understand personal finance and basic financial management concepts. TAP\$ instructs servicemembers, veterans and their families how to "check before they invest" to help avoid unlicensed

salespeople and unregistered or inappropriate products. TAP\$ also educates servicemembers, veterans and their families about high-pressure sales tactics and other warning signs of financial fraud, especially affinity fraud.

Measurable goals and objectives include the number of TAP\$ presentations given by DOC staff; the number of TAP\$ publications distributed by the DOC and its partners; and the number of attendees. Another measure of program success consists of contacts from base financial counselors requesting TAP\$ materials or presentations.

The TAP\$ curriculum includes the following topics:

- Watch Out for These Scams
- Use Financial Common Sense
- Safeguard Your Personal Info
- Financial Difficulties
- "Anticipatory" Loans, Including Payday Loans
- Returning to Civilian Life
- Overspending and Gambling Problems
- Resource Guide
- "Check Before You Invest" Form

C. Collaborative Efforts

The main goal of DOC's multiple collaborative efforts to provide investor education is to open additional distribution networks and create exponentially more opportunities to reach target audiences. Reaching more people means more consumers are empowered to make wise, safe and informed decisions about their finances and investments. Collaboration is an essential part of investor education because each partner's resources, capacity, experience and expertise help leverage scarce resources, resulting in more robust outreach.

Recently, DOC collaborated with the California Commission on the Status of Women and the CA Department of Financial Institutions to provide women with financial literacy information. Because statistically, women tend to both outlive and earn less than men, many women have less secure financial situations than their male counterparts. Recognizing this, the DOC and its partners took an existing DOC publication entitled *8 Tips for Financial Success*, refined the wording and marketed the new publication as *Financial Tips for Women*. This collaboration also resulted in *Reduce Your Debt* and *Create a Budget*.

Other organizations with which DOC collaborates include the Investor Protection Trust, FINRA, the US Department of Defense and the US Census Bureau, other States, California Departments of Financial Institutions, Insurance, Real Estate, Housing and Finance, Consumer Affairs, Veterans Affairs, Social Services, the Attorney General and others along with dozens of county, local government and community-based and non-profit organizations.

(2) What do you consider the most important characteristics of an effective investor education program?

Effective investor education programs must be relevant for their target audience. Making investor education content relevant for intended audiences is, in our experience (and also according to current scholarship on the issue), critical to achieving the desired result of more informed and cautious behavior with regards to investment decisions. For instance, simply telling audiences to “check before they invest” without explaining why checking out the background and credentials of financial services professionals is important, doesn’t provide meaningful relevance. Using diverse media to deliver educational content for specific demographic groups (for example, social media for young people and hard-copy, large print publications for seniors) are also a necessary element of effective investor education programs.

For example, telling seniors that they’re targets for financial fraud and scams because they have amassed a lifetime of savings and equity in their homes simply states a fact many of them already know. However, in our experience, giving seniors specific examples from our own enforcement cases about financial fraud involving educated, professional middle-aged and elderly people better captures their attention because they can relate to that example. Relaying a story about a DOC enforcement case involving faith-based affinity fraud (where members of a particular congregation were scammed despite being educated and affluent) gives needed context to generic slogans like “check before you invest.”

In California, over 40% of adults speak a language other than English at home (per the 2011 US Census Bureau Statistical Abstract), which makes offering investor education information in multiple languages critical to reaching all Californians. Based on US Census data and academic analysis, DOC prioritized which alternate language versions of key publications to initiate. For example, the SAIF booklet is available in Spanish, Chinese and Tagalog.

(3) What programs do you view as most effective?

Many Americans lack personal financial education, making informed investment decisions almost impossible to accomplish. DOC has found that consumers must first understand basic financial concepts, such as money management and debt reduction, before they are able to process and utilize messages and information about wise and safe investing. As discussed above in question (2), audience-specific materials and appropriate modalities of delivering investor education also make a significant difference in program effectiveness.

Once consumers understand basic financial concepts, they can be empowered to protect themselves from fraud. To accomplish this, consumers need materials written in plain English that spell out the risks associated with various financial products and

investments and list the warning signs of fraud, such as high-pressure sales tactics and promises of unrealistic returns. Only after consumers understand basic concepts and learn how financial fraud and scams work are they truly ready to grasp true investor education concepts such as diversification, risk tolerance, and planning for a secure retirement.

Effective programs of which DOC has direct knowledge include its own SAIF and TAP\$ programs in addition to *MoneyTrack* (a PBS television series about investor education and investor protection funded by the Investor Protection Trust in partnership with State securities regulators), multiple FINRA endeavors such as saveandinvest.org and community library programs, Pennsylvania's *Senior Fraud Bingo* and *MoneySmart* programs, Florida's *Investor Education on Your Base* program, Oklahoma's *My Money Handbook* and *Money Matters* and *Invest Ed* programs, and Washington State's excellent online resources.

(4) Has your organization or an independent third party evaluated any of your organization's programs? If yes, please describe the findings of the evaluation, including any statistical evidence of how your program effectively changed one or more investor behaviors among participants.

DOC's SAIF program has been evaluated by thousands of attendees; a spreadsheet summarizing responses is attached. The evaluations simply confirm that the attendees improved their knowledge of how to recognize the warnings signs of investment fraud and other basic investor education concepts. Funding for follow-up studies to determine what percent of attendees changed their behavior as a result of knowledge gained a SAIF presentation does not exist. Such studies would entail contracting with high-level (and expensive) consultants and academics, requiring resources beyond the capacity of the DOC (and most governmental organizations). If, for example, the SEC provides funding to study effective investor education programs, California would be eager to participate.

(5) Are any of your organization's programs national in scope? If not, could any of these programs be replicated or expanded to reach a national audience?

DOC's programs focus on California. The grassroots, peer-to-peer educational approach adopted by SAIF was so successful in California that the North American Securities Administrators Association (NASAA) named SAIF as a national model. NASAA provided start-up tool kits for all its members. To date, Iowa, Florida, Maine, Mississippi, West Virginia, Alabama, Pennsylvania, Illinois, Louisiana and Tennessee have all implemented a version of the SAIF program.

The TAP\$ model has been replicated in other States through the Investor Protection Trust. Florida operated a successful *Investor Education on Your Base* program; Alabama, North Carolina, New Jersey and other States also engage in some form of military

financial education outreach. Investor Protection Trust grants are intended to promote programs and publications that are replicable and effective, so that future iterations exist as turn-key, stand-alone products for easy use by other entities. TAP\$ is an excellent example because its publications are available for use by all NASAA members, who may customize portions for their own audiences.

Another example of a collaborative effort in which the DOC engaged that could be replicated by other States is the payday lending brochure entitled *What You Need To Know About Payday Loans*. The DOC partnered with California's payday lending trade association to distribute the brochure, which was then shipped to every storefront payday lending location in the State (over 2500 separate locations). Included on the form is a dedicated e-mail address to request additional copies; to date, several hundreds of thousands of copies of the brochure in both English and Spanish have been distributed statewide.

(6) What types of investor behaviors or other topics do you think investor education programs should focus on? Why?

Investing is defined as committing money to gain profit or interest. In a larger sense, the act of investing involves taking part in the economy, whether by purchasing groceries, using credit cards, or buying shares in a mutual fund. Basic financial education that focuses on sound money management practices is the foundation on which effective investor education programs are built. Consumers must first understand basic financial concepts before they are able to comprehend more sophisticated information about developing actual investment strategies that involve purchasing complicated financial products. Even highly educated, informed and skeptical consumers fall prey to investment and other financial scams. Simply knowing about diversification and saving money isn't enough; consumers need to understand how scams like affinity fraud work and what makes people susceptible to financial fraud. Effective investor education programs focus on empowering consumers to make safer, more informed decisions.

Investor education is so important because American consumers must navigate a complicated financial services marketplace with a large array of confusing products, where one mistake can ruin a family's financial health. Americans are increasingly dependent on their own savings for retirement, and as the recent stock market crash indicates, equities are subject to the whims of global financial markets. Even the most conservative savings plans are typically market-based, which makes comprehensive, unbiased investor education essential if consumers are to avoid speculative, risky investments.

June 13, 2011

- 7 -

(7) Which best describes you or your organization?

DOC is California's State securities regulator, responsible for licensing and regulating broker-dealers, and investment advisors. In addition, the DOC provides regulatory oversight for non-depository financial institutions, such as certain escrow companies, finance lenders, payday lenders, mortgage bankers, and other financial services professionals. The DOC is also charged with providing education to help the public better understand the risks and rewards of investments and finances, and help them navigate the financial services world.

(8) Do you have any other comments regarding the effectiveness of existing private and public efforts to educate investors?

a.	Public, federal government The federal government partners with community-based, State and local organizations that deliver financial literacy and investor education content. For example, the FTC has a robust outreach program. Given the effectiveness of prevention education on the front end at lowering the expensive cost of enforcement on the back end, additional federal support for States engaging in investor education activities in the form of funding and other resources would be very helpful in further developing existing programs that protect consumers. Many State investor education professionals are excited about the mission of the new Consumer Financial Protection Bureau, which includes a robust education program as part of its mission.
b.	Public, state or local government Many States engage in some form of investor education. For example, through NASAA, many States (such as CA, PA, OK, and others) make their proven resources and programs available to others.
c.	Not-for-profit Non-profits are an essential partner for many States. For example, Jump\$tart financial literacy is an important partner for reaching youth. In California, the DOC partners with Jump\$tart, the Elder Financial Protection Network, County Financial Abuse Specialist Teams (FAST), credit unions and many others.

California Department of Corporations
Comments to U.S. SEC on Investor Education Programs – File Number 4-626

June 13, 2011

- 8 -

d.	Foundation The DOC partnered with the California AARP Foundation, but grew uncomfortable with the relationship because AARP increasingly advocates for legislation in addition to selling financial products such as annuities and reverse mortgages.
e.	Private/business Because many private sector businesses that seek to partner with the DOC sell financial products, we tend not to partner with them. For example, the DOC regularly receives partnership offers from firms that sell reverse mortgages, or from insurance agents that sell annuities to hold workshops for their clients. The DOC typically does not partner with organizations that sell financial products, as we do not want to convey the image that the DOC approves of any particular firm or product over another. Further, the financial education curriculums of many private companies and banks, tend to emphasize the convenience and positive features of products such as credit cards without giving adequate weight to the negative, even dangerous, features of those products (such as how high interest rates on credit cards can double the cost of a product purchased using a credit card).
f.	Individual The DOC rarely partners with private individuals, unless the individual is someone of particular prominence, such as the First Lady.
g.	Other (describe)

California Department of Corporations
Comments to U.S. SEC on Investor Education Programs – File Number 4-626
June 13, 2011

ATTACHMENT A

Seniors Against Investment Fraud (SAIF) Program:

Protect Yourself from Fraud – 2nd Edition (4/08) and
Addendum to SAIF 2nd Edition (4/10) – (inserted into booklet)
Spanish 2nd Edition (6/10)
Tagalog Edition (8/10)
Chinese Edition (10/07)

Troops Against Predatory Scams (TAP\$) Program:

Protect You and Your Family from Fraud – 2nd Edition (5/09)
A Salute to Smart Investing – CA Edition
Spanish Version – CA Edition

CA Department of Corporations:

Tri-fold Brochure (3/08)
Spanish Version (4/09)

CA Deferred Deposit Transaction Law (CDDTL):

What You Need to Know About Payday Loans (4/09)
Spanish Version (6/10)
CA Payday Lenders Map of CA – Concentration by County (11/07)

Financial Education:

Financial Tips for Women (7/11)
Reduce Your Debt (7/11)
Create a Budget (7/11)

Research on Mild Cognitive Impairment:

Denburg, et al, "The Orbitofrontal Cortex, Real-World Decision Making, and Normal Aging," *Ann NY Acad Sci.* 2007 December; 1121: 480-498

Program Evaluations:

CA DOC – SAIF Evaluations for Calendar Years 2005-2009

Attachments:

Department of Corporations Brochure,

http://www.corp.ca.gov/pub/pdf/EO/About_DOC_Trifold_web.pdf

“Protect Yourself from Fraud”, Seniors Against Investment Fraud (SAIF)

http://www.corp.ca.gov/pub/pdf/SAIF/SAIF_2nd_Edition_Web.pdf (Also available in Spanish, Tagalog and Chinese)

“Protect Yourself and Your Family from Financial Fraud”, Troops Against Predatory Scams (TAP\$)

[http://www.corp.ca.gov/pub/pdf/TAP\\$/Taps_Booklet.pdf](http://www.corp.ca.gov/pub/pdf/TAP$/Taps_Booklet.pdf)

“A Salute to Smart Investing”, by Virginia and Kenneth Morris.

http://www.militarysaves.org/elements/www.militarysaves.org/File/Salute_Smart_Investing.pdf

“What You Need to Know About Payday Loans”,

http://www.corp.ca.gov/pub/pdf/EO/Payday%20Loan%20Trifold_2nd%20ed_web.pdf



CA Commission on the Status of Women
www.women.ca.gov



CA Department of Financial Institutions
1-800-622-0620
www.dfi.ca.gov



CA Department of Corporations
1-866-ASK-CORP
(1-866-275-2677)
www.corp.ca.gov

To request additional copies of this publication,
please call Toll-Free or e-mail forms@corp.ca.gov

Financial Tips for Women

"You don't get rich by what you earn. You get rich by what you don't spend."
- Henry Ford

Educate Yourself

Empowering yourself to take control and manage your finances is an important part of financial health, much like nutrition and exercise are key components of physical health. And, whether you consider yourself an "investor" or not, everyone invests money by the simple act of spending it. Look for quality financial information from neutral, reputable sources such as governmental and non-profit websites and publications, and **not** from salespeople. When making a financial decision, be sure to evaluate alternatives and compare fees and services. For example, if you're looking to open a savings account, consider different banks and credit unions to see which offers the products and services most important to you. If you're shopping for a loan, take the time to compare interest rates and fees. Reliable sources for

financial information include the Federal Citizen Information Center <http://www.pueblo.gsa.gov>, the US Financial Literacy and Education Commission <http://www.mymoney.gov/>, Kiplinger and Yahoo Finance. Find workshops sponsored by government agencies, community colleges or adult schools, and attend with family or friends. And **always** check the license status of any financial professional **before** you entrust them with your money! Contact the CA Department of Corporations (or other appropriate licensing agency) for assistance.

Set Financial Goals

Make it a regular habit to set financial goals, and create new goals once those are met. If long-term goals seem too overwhelming, make short term goals instead, so that it is easier to measure your progress. As with exercise and

E&O Financial (NEW 7/11)



Follow us on Twitter @CAFLM
for additional financial literacy information

nutrition, some people find it works best to set daily or weekly goals: "I will save \$50 this paycheck" or "Today, I will bring my lunch rather than eat out, and save \$10."

Get out of Debt

Not all debts are created equal. Some debt, such as home loans or student loans, may offer tax write-offs and enable women to achieve greater wealth and/or earning power. Other debt, such as credit cards, offers no such benefits, and in fact takes money away from your future wealth. If you have credit card debt, stop charging. Try to pay more than the minimum payment, or you could easily end up paying back far more than you initially charged. If you are experiencing financial difficulty, contact creditors before payments are due. Ask creditors to waive fees, reduce the interest rate, or work with you to create a payment schedule that will work with your budget.

Save, Save More, and Keep Saving

Many women consider themselves spenders, not savers. "I'll start that savings account soon" or "Buying gifts for my family and friends makes me feel good" are common excuses. Instead, look at saving as **spending for your future**. Everyone needs a nest egg or rainy day fund. The easiest way to start is to start small—regularly deposit even a

modest amount into an interest-bearing savings account. Soon you'll have a special savings fund that can help you handle unanticipated expenses.

Manage Your Own Finances

In the past, many women were less experienced at managing finances than men. Even today, many women are dependent on their partner/spouse's income and financial expertise. If something happens, such as job loss, separation, divorce, or the death of a spouse, women may be left with few financial resources and a mountain of debt. Learn to manage your own finances and become financially competent. A good way to do this is to establish and manage your own checking, savings and retirement accounts, and make regular deposits into each.

Plan for Retirement Now

Because the economic future is uncertain, the sooner you start planning for retirement, the better. Don't put off saving for retirement or leave it up to someone else to make those decisions. This is especially important for women, since women tend to live longer and earn less than men, and often have career gaps due to family responsibilities. As a result, women often receive lower pensions and

have fewer assets in retirement. If you already have a retirement plan, increase your contributions and/or open a second account if at all possible. If you haven't started, attend retirement workshops hosted by non-profits, government agencies, community centers, your employer or other non-commercial entities to learn more about your options. Review your Social Security benefits and use the on-line retirement calculator: www.ssa.gov

Protect Yourself from Fraud

If a financial opportunity sounds too good to be true, it most likely is. Don't believe promises of quick profits or "insider" information, and don't fall for tactics like "you must act now!" Always verify that paperwork matches promises, and **never** sign a blank form. Salespeople may be more motivated to profit from your transaction (by earning commissions or bonuses) than to look out for **your** best interests. Be sure to ask how financial services professionals receive their compensation—for example, do they receive an up-front fee, or do they receive commissions or bonuses based on the products sold? Unethical salespeople may try to switch interest rates, terms and conditions, or change other important financial details. And if a salesperson won't allow you time to compare prices and features or explore other options—be cautious! These are warning signs of

fraud. Consider diversifying the types of accounts you use for your investments as well as the institutions that hold your money. Also, review your telephone bills, credit card bills, cell phone bills and other accounts to be sure that you're not being charged for a product or service you didn't order or don't need.

Safeguard Your Personal Information

Request and review your credit report at least once every year, and look for accounts you don't recognize (especially new accounts), suspicious charges, or any addresses where you've never lived. To get your **free** credit report, go to www.annualcreditreport.com Note: Other websites or vendors may offer a "free" credit report but require the purchase of some other product or service.

Make it a practice to regularly review your bills, financial statements, files and records. Shred (don't toss) cancelled checks, credit card statements, old bills, and other financial papers. When creating passwords, **DO NOT** use such things as your mother's maiden name, pet or children's names, birth or anniversary dates, phone numbers, consecutive numbers, or the last four digits of your Social Security number.



CA Commission on the Status of Women
www.women.ca.gov



CA Department of Financial Institutions
1-800-622-0620
www.dfi.ca.gov



CA Department of Corporations
1-866-ASK-CORP
(1-866-275-2677)
www.corp.ca.gov

To request additional copies of this publication,
please call Toll-Free or e-mail forms@corp.ca.gov

OSP 11 121072

Follow us on Twitter @CAFLM
for additional financial literacy information

Reduce Your Debt

Understand Your Debt

Not all debts are equal. Knowing what kind of debts you have is an important first step. For example, home and school loans may reduce your taxes, increase your equity, and enable you to achieve greater wealth and earning power. Other debt, such as credit card debt and car loans, typically charge high interest rates and take money away from your future wealth.

Credit enables you to make purchases without using cash. However, convenience has a price – interest. And the longer it takes you to pay off the credit balance, the more interest you pay. To reduce debt, stop borrowing more than you can afford to pay off every month.

Signs of Financial Trouble

In today's economy, millions of Americans are unable to cover their basic living expenses, let alone pay off debt. Financial difficulties may lead to greater use of credit cards, cash advance loans, or other high cost options. Be careful – this may lead to a cycle of debt from which it will be very difficult to recover.

If any of the following apply to you or your family, you may need help:

- You make late payments, miss payments, or juggle payments
- Your total credit card debt is more than your total monthly income
- You don't have any savings and are unable to save money
- You are only able to pay the minimum on a credit card for two consecutive months
- You or a family member can't stop overspending. (For advice and support, go to Spenders Anonymous www.spenders.org)



E&O Fin Lit 002 (NEW 7/11)

5 Steps to Get Out of Debt

1. Make a Budget:

List all your income sources, expenses, and debts and calculate the minimum amount you must pay each month. Keep track of every single purchase for a month - coffee, parking, etc. This will help identify opportunities to reduce your spending, making more money available to pay off debt. Make a budget, then stick to it.

2. Prioritize Your Debts:

Evaluate which debts to tackle first. You might begin by aggressively paying off the debt with the highest interest rate, while making smaller payments on debts with lower interest rates. When the debt with the highest interest rate is paid off in full, apply the same aggressive payment strategy to the debt with the next highest interest rate, and so on.

However, if interest rates on your debts are similar, you may want to first repay the debt with the lowest balance owed. Paying off even a small debt provides a sense of accomplishment that can energize you to tackle larger debts.

3. Pay Off Debt:

Whenever possible, pay off the entire balance of your credit card(s) and other debts each month, or at least pay more than the minimum monthly payment.

Remember, interest rapidly increases the total amount owed. Credit cards typically charge high interest rates, so making only the minimum payment means you will pay far more in interest than if you were to make a larger (or full) payment. If possible, make one additional payment per year on large loans (like those for cars and houses) - this can significantly reduce your interest costs over time.

4. Find Out Your Credit Score:

Your credit score is used by lenders to determine whether you qualify for a specific loan, credit card, or financial service. The better (higher) a credit score, the lower the interest rates charged on current and future loans.

Your credit score is based on the amount of credit you already have, your debt-to-income ratio, and your payment history. For a fee, you can get your credit score information at www.myfico.com

Note: Other websites or vendors may offer a "free" credit score; however, such offers typically require some kind of purchase or monthly fee.

5. Improve Your Credit Score:

- Pay bills on time. If you miss a payment, get current and stay current.
- Manage your credit responsibly. In general, having credit cards and installment loans (and paying timely payments) will raise your credit score.
- Keep balances low on "revolving credit" accounts (those without a fixed number of payments) such as gasoline or retail store credit cards.
- Don't move debt around. Opening new cards with low introductory rates to move large balances from accounts with higher interest may be risky. If you don't pay the balance off in full before the introductory rate expires, you may end up paying even higher interest rates later. Opening and closing cards can also negatively affect your credit score.
- Re-establish your credit history if you have had problems. Open a new account and pay it off on time - this will raise your credit score over time.

Financial Difficulties

If you or family members frequently spend more than you can afford, worry about making ends meet, fear opening monthly bills, or stress when applying for a loan - you need help! Don't let fear or embarrassment prevent you from seeking help - if you cannot pay your bills, contact creditors *before* payments are due. Be persistent - a few phone calls can make a big difference! Ask your creditors to waive fees, reduce the interest rate, or help you create a payment schedule that will work within your budget.

If You Have Credit Problems

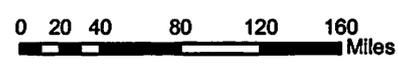
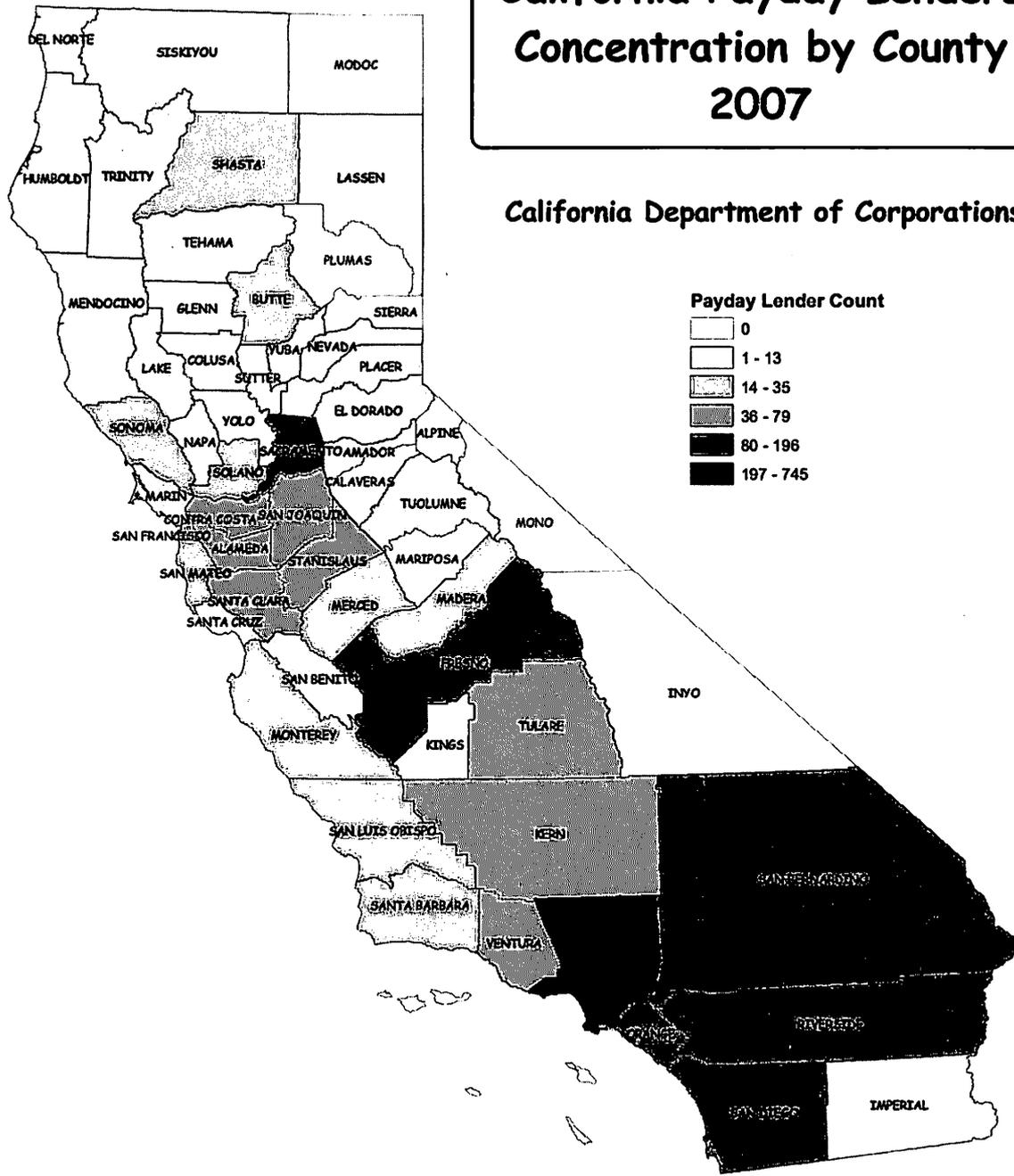
For assistance with credit problems and creditors, go to National Foundation for Credit Counseling (NFCC) www.nfcc.org or call Toll-Free 1-800-388-2227.

If You Are Facing Bankruptcy

Recent Federal law requires mandatory credit counseling before you can declare bankruptcy. Go to <http://www.ftc.gov/bcp/menus/consumer/credit/debt.shtm> to download "Before You File for Personal Bankruptcy: Information about Credit Counseling and Debtor Education." The U.S. Department of Justice Trustee Program approves organizations to provide mandatory counseling before you can declare bankruptcy and mandatory debtor education after you declare bankruptcy. Go to www.usdoj.gov/ust/eo/bapcpa/ccde/index.htm

California Payday Lenders Concentration by County 2007

California Department of Corporations



Map Prepared by RMcDowell, CERES Program

November 1, 2007

CREATE A BUDGET



An important first step in money management is to create a budget. A budget is a spending plan - an estimate of expected income and expenses over time. It should be adjusted as your financial circumstances change. Try to set up an "emergency" fund, save and invest for your future, and pay off debts as fast as possible.

Step 1 **First, track your daily spending. For one month, write down every single item you purchase. Be sure to include coffee, parking, lunches, stuff for the kids, dry cleaning, credit card payments, postage, etc. This will help you identify exactly where you spend money, and help identify opportunities to better manage your money and perhaps reduce spending.**

It may also be useful to note your method of purchase -- cash, debit card, check, credit card, gift card; you may find you are more careful about spending money when writing checks and less attentive with cash, for example.

Step 2 **List all your monthly income sources. Include salaries/wages, tips, commissions, and child support/spousal support, etc. If you get paid weekly or twice-monthly, or if you receive occasional income, you will need to adjust the amounts to reflect a monthly amount. Then total all your income sources.**

Step 3 **List all your monthly expenses, bills, and debts owed. Some expenses (such as insurance & property taxes) may be billed quarterly or semi-annually, so adjust them to reflect a monthly amount. Then total all your expenses.**

Step 4 **Compare your Total Monthly Income to Total Monthly Expenses to get a clear picture of where you spend your money. Think about where your money goes and consider what opportunities exist for savings, retirement funds, and debt reduction. Often, as a result of seeing all expenses on paper, people notice there are opportunities to reduce spending.**

Also, contact your creditors, service providers, and other account holders to ask if you qualify for any discounts. For example, if you ask, retail stores may give you a discount, and cable TV and telephone service providers often run "specials" or offer other discounts.

I. Track Your Daily Spending

ITEMS	Cost	Monthly Cost	Annual Cost
Example: Coffee	\$2.50	\$50.00	\$600.00
<i>(purchase coffee every day for 20 workdays per month - and it all adds up!)</i>			
Soda	\$	\$	\$
Snacks	\$	\$	\$
Fast Food	\$	\$	\$
Restaurants	\$	\$	\$
Magazines/ Books	\$	\$	\$
Cell Phone Rings	\$	\$	\$
Itunes - music/games	\$	\$	\$
DVDs	\$	\$	\$
CDs	\$	\$	\$
Entertainment	\$	\$	\$
Clothing	\$	\$	\$
Shoes	\$	\$	\$
Jewelry	\$	\$	\$
Purses	\$	\$	\$
Cosmetics	\$	\$	\$
Parking	\$	\$	\$
Other	\$	\$	\$
Other	\$	\$	\$
Other	\$	\$	\$
Other	\$	\$	\$
Other	\$	\$	\$
Other	\$	\$	\$
Total	\$	\$	\$

II. List Your Monthly Income

	Monthly Amount
Salary/Wages	\$
Spouse's Salary/Wages	\$
Overtime	\$
Bonuses	\$
Commissions	\$
Tips	\$
Pension/Retirement Payments	\$
Social Security/Disability	\$
Child Support/Spousal Support (as income)	\$
Other Household Income	\$
Other Income	\$
Other Income	\$
	\$
Occasional Income:	\$
Gifts Received From Others	\$
Tax Refunds, etc.	\$
Lump Sum Retirement/	\$
Lump Sum Unemployment/	\$
Other	\$
Other	\$
TOTAL MONTHLY INCOME	\$0

III. List Your Monthly Expenses

Housing		Due Date	Method of Payment?	Monthly Amount
			(Check, Cash, Charge, etc)	
	Rent/Mortgage			\$
	Homeowners/ Renters Insurance			\$
	Other Housing Fees			\$
	Household Maintenance/Repairs			\$
	Yard Maintenance			\$
	Occasional:			\$
	Property Taxes			\$
	Housing Deposit (first-last months' rent, etc)			\$
		Total		\$

Utilities		Due Date		
	Electricity			\$
	Gas			\$
	Water			\$
	Garbage			\$
	Sewer			\$
	Internet			\$
	Cable TV			\$
	home			\$
		Total		\$

Food and Household Expenses		Due Date		
	Groceries			\$
	Eating Out			\$
	Pet Food			\$
	Holiday Entertaining			\$
	Beverages (Soda, wine, beer, etc)			\$
	Other Food Expenses			\$
	Household Expenses (cleaning supplies, etc.)			\$
		Total		\$

III. List Your Monthly Expenses - continued -

Credit and Banking	Due Date		
Credit Card Payments			\$
Student Loans			\$
Auto Loans			\$
Other Loans			\$
Bank Charges			\$
Other Insurance Costs			\$
Other Finance Costs			\$
	Total		\$

Medical Care	Due Date		
Medical/Dental Costs			\$
Insurance Payments			\$
Vision Care, Glasses etc			\$
Medication			\$
Medical Co-payments			\$
Veterinary/Pet Costs			\$
Other			\$
	Total		\$

Child-Related (or Other Family)	Due Date		
Childcare			\$
School-related Costs			\$
Sports/Activities			\$
Entertainment, Parties, etc			\$
Allowances for Children			\$
Other			\$
Other			\$
	Total		\$

Transportation	Due Date		
Gasoline, etc			\$
Car Insurance			\$
Parking			\$
Car Maintenance			\$
Monthly Transit Costs			\$
Other Commuting Costs			\$
Other			\$
	Total		\$

III. List Your Monthly Expenses - continued -

Personal		Due Date		
	Beauty/Hair			\$
	Clothing, Shoes			\$
	Laundry/Dry Cleaning			\$
	Gym Membership			\$
	Subscriptions			\$
	Other			\$
	Other			\$
		Total		\$

Savings/Investments		Due Date		
	Savings Accounts			\$
	Investments			\$
	Educational Savings Accounts			\$
	Retirement Accounts			\$
	Other			\$
		Total		\$

Miscellaneous		Due Date		
	Gifts Given to Others			\$
	Holiday expenses			\$
	Child Support Payments			\$
	Ex-Spousal Support Payments			\$
	Charitable Donations			\$
	Entertainment/Recreation			\$
	Other			\$
		Total		\$

TOTAL MONTHLY EXPENSES				\$
-------------------------------	--	--	--	----

IV. Compare your Total Income to your Total Expenses

	MONTHLY		ANNUAL
TOTAL INCOME	\$	x 12	\$

TOTAL EXPENSES	\$	x 12	\$
----------------	----	------	----



Published in final edited form as:

Ann N Y Acad Sci. 2007 December ; 1121: 480–498.

The Orbitofrontal Cortex, Real-World Decision Making, and Normal Aging

Natalie L. Denburg^a, Catherine A. Cole^b, Michael Hernandez^a, Torricia H. Yamada^a, Daniel Tranel^a, Antoine Bechara^c, and Robert B. Wallace^d

¹Department of Neurology, Division of Cognitive Neuroscience, University of Iowa Roy J. and Lucille A. Carver College of Medicine, Iowa City, Iowa, USA

^bDepartment of Marketing, University of Iowa, Iowa City, Iowa, USA

^cDepartment of Psychology, University of Southern California, Los Angeles, California, USA

^dDepartment of Epidemiology, University of Iowa College of Public Health, Iowa City, Iowa, USA

Abstract

The present series of three studies aims at investigating the hypothesis that some seemingly normal older persons have deficits in reasoning and decision making due to dysfunction in a neural system which includes the ventromedial prefrontal cortices. This hypothesis is relevant to the comprehensive study of aging, and also addresses the question of why so many older adults fall prey to fraud. To our knowledge, this work represents the first of its kind to begin to identify, from an individual-differences perspective, the behavioral, psychophysiological, and consumer correlates of defective decision making among healthy older adults. Our findings, in a cross-sectional sample of community-dwelling participants, demonstrate that a sizeable subset of older adults (approximately 35–40%) perform disadvantageously on a laboratory measure of decision making that closely mimics everyday life, by the manner in which it factors in reward, punishment, risk, and ambiguity. These same poor decision makers display defective autonomic responses (or somatic markers), reminiscent of that previously established in patients with acquired prefrontal lesions. Finally, we present data demonstrating that poor decision makers are more likely to fall prey to deceptive advertising, suggesting compromise of real-world judgment and decision-making abilities.

Keywords

aging; frontal lobe; decision making

INTRODUCTION

This article presents a series of three studies that begin to identify, from an individual-differences perspective, the behavioral,¹ psychophysiological,² and consumer (Denburg *et al.*, manuscript submitted for publication) correlates of defective decision making among seemingly healthy older adults. The basic hypothesis for these studies involves the idea that some normal older persons, who are free of obvious neurologic or psychiatric disease, have deficits in reasoning and decision making on account of dysfunction in a neural system which includes the ventromedial prefrontal cortices (VMPC).

Address for correspondence: Natalie L. Denburg, Ph.D., Assistant Professor, #2007 RCP, Department of Neurology, University of Iowa Hospitals and Clinics, 200 Hawkins Drive, Iowa City, IA 52242-1053. Voice: 319-356-7619; fax: 319-384-7199. natalie-denburg@uiowa.edu.

It is important to be clear right from the outset about our anatomic terminology, because some confusion tends to surround the use of the terms orbitofrontal and ventromedial regions of the prefrontal cortex. The orbitofrontal region includes the rectus gyrus and orbital gyri, which constitute the inferior surface of the frontal lobes lying immediately above the orbital plates. In humans, lesions that involve this region are not usually restricted to the orbitofrontal cortex, but they extend into neighboring cortex and involve different sectors of the medial and ventral regions of the prefrontal cortex, as well as the subgenual part of the anterior cingulate (i.e., Brodmann's areas 25, lower 24, 32, medial aspect of 11, 12, and 10, and the white matter adjacent to all of these areas). Therefore, in most of our studies of patients with lesions in this region, we refer to the damage as involving the VMPC regions, and not strictly the orbitofrontal region.

Our hypothesis is relevant to the comprehensive study of aging, and it is also relevant to the pressing practical issue of why so many older adults fall prey to fraud. The theoretical framework that guides this work is built around the "frontal lobe hypothesis" of cognitive aging,^{3,4} which in broad terms implies that some older adults have disproportionate age-related change of prefrontal brain structures, and, concomitantly, of associated cognitive functions. The frontal lobe hypothesis is supported by multiple sources of evidence that are steadily mounting, involving neuropsychological,⁵⁻¹⁴ neuroanatomic,¹⁵⁻²¹ and functional neuroimaging^{22,23} studies. The hypothesis has not been without its critics,^{24,25} but it provides a plausible and testable account of at least some age-related neurocognitive phenomena.⁴

SIGNIFICANCE

Older adulthood has been characterized as a period of critical and complex decision making, and for many of the decisions that older adults make, there is a lot at stake. For example, the elderly deal with such issues as investment of savings and retirement income, purchase of insurance and living trusts, estate planning, anticipating and planning possible nursing home placement, purchase of a burial site, funeral costs, out-of-pocket medical costs, and sudden changes in financial roles following the death of a spouse. For most, these decisions are made while the person is on a fixed income. Such decisions would be a challenge even for intelligent young adults; however, when one considers possible executive dysfunction, in conjunction with fraudulent and vicious marketing extant in the social system, the degree of decision-making difficulty is greatly augmented in older adults.

Beginning in 1996 and continuing to the present, the U.S. Senate and House of Representatives have held numerous hearings focused on the fact that a sizable proportion of the elderly are falling prey to both misleading and fraudulent advertising.²⁶ Despite recent legislative emphasis on this issue, research efforts examining older consumers' vulnerability to fraud are sorely lacking. In the studies that follow, we argue that cognitive vulnerability generally, and impairments in decision-making ability specifically, even in the context of relatively intact memory and intellect, can explain why older adults are frequently the victims of unscrupulous business activities.

STUDY 1: BEHAVIORAL CORRELATES OF DEFECTIVE DECISION MAKING

Researchers at the University of Iowa, Division of Behavioral Neurology and Cognitive Neuroscience, have been long interested in a critical set of functions associated with prefrontal brain structures, especially the processes of reasoning, decision making, and how these interface with emotional processing. It has been shown that younger patients with acquired VMPC damage manifest notable real-world decision-making impairments²⁸ and, moreover, have impaired self-awareness of such deficits. Thus, guided by rationale derived from our work with lesion patients, we examined the possibility that a sizable number of elderly suffer from a decline in cognitive functions critical for decision making, in spite of relatively intact memory

and general intellect. In turn, the first manifestation of this cognitive decline may be exercising poor judgment and decision making in many important real-life matters.

In the initial study in this series, neurologically and psychiatrically healthy older and younger adults were administered a well-validated decision-making paradigm, called the Iowa Gambling Task (IGT). The IGT provides a close analogue to real-world decision making in the manner in which it factors reward, punishment, and unpredictability,²⁹ and taxes decision-making functions mediated by the VMPC region.^{30–33} Here, we hypothesized that a subset of older adults would manifest decision-making deficits on the IGT.

An age- and sex-stratified community-dwelling sample of 80 adults was dichotomized on age, using a conventional demarcation point,³³ to form a Younger Group (aged 26–55 years [$M = 41.0$ years]; 50% female) and an Older Group (aged 56–85 years [$M = 70.4$ years]; 53% female). Each participant was tested individually in a 3-hour session that included the IGT and a battery of standard neuropsychological tests. A structured interview (as in Tranel *et al.*³⁴) was used to determine that all participants enrolled in the study were deemed exceptionally healthy. Exclusionary criteria included major surgeries with complications; neurological events, such as cerebrovascular insults, seizures, or head injury with loss of consciousness exceeding 5 min; medications, especially those that might produce untoward effects on cognition; and a history of significant psychiatric disease necessitating inpatient treatment and/or interfering with daily functioning.

The computerized IGT was administered in the standard fashion,³⁰ involving 100 card selections from four decks. Some card selections are followed by a reward only (monetary gain); others are followed by a reward and a punishment (monetary loss). The task is manipulated such that decks with lower immediate reward have lower long-term punishment, and thus yield an overall net gain (decks C and D, referred to as “Good” decks); decks with higher immediate reward have higher long-term punishment, and thus yield an overall net loss (decks A and B, referred to as “Bad” decks). Participants are not informed about the number of trials or the reward/punishment schedules, and the schedules cannot be deduced mathematically. To quantify performance on the IGT, the 100 choices are divided into five discrete blocks of 20 cards each, and for each Trial Block, we calculate a performance score by subtracting the number of disadvantageous deck choices (A and B) from the number of advantageous deck choices (C and D), [(C + D) – (A + B)]. Scores below zero thus indicate “disadvantageous” performance (an overall loss of money), and scores greater than zero indicate “advantageous” performance (an overall gain of money).

The normal pattern of performance in healthy, non-elderly individuals is to begin the first Trial Block by selecting more from the Bad decks than from the Good decks, because the Bad decks have the appeal of more immediate reward. As the game progresses, however, steep penalties are encountered in the Bad decks, and participants gradually shift their selections toward the Good decks. By the final couple of Trial Blocks, participants select predominantly from the Good decks. FIGURE 1 depicts such a positively sloped performance, graphed as a function of Trial Block, which begins a bit below the zero mark and gradually rises into the positive range as participants begin selecting cards in a more and more advantageous manner. By contrast, in patients with neurologic damage to the VMPC, the ability to shift decision making in a favorable direction is impaired, and the patients continue to choose preferentially from the Bad decks for the duration of the game (FIG. 1).³⁰

IGT performances of the Younger and Older Groups were analyzed with a 2×5 ANOVA using Age Group (Younger versus Older) as the between-subjects factor, and Trial Block (1–5) as the within-subjects factor. It was our expectation that this analysis would yield an interaction: the Younger Group was expected to show the typical positively sloped line, whereas the Older

Group, which we believed would contain a subset of participants who performed disadvantageously, was expected to show a flatter slope across Trial Blocks. We also looked at individual performance profiles in each of the Groups. We collapsed across Trial Blocks and calculated for each participant a single index of performance, specifically, the sum of Good deck choices minus the sum of Bad deck choices $[(C+D)-(A+B)]$. Under the assumption that random behavior on the IGT would yield a score of zero in this formula, we categorized each participant as “unimpaired” or “impaired,” based on whether the overall performance index differed significantly from zero (using the binomial test), and in which direction. Participants who had indices that were significantly different from zero in the positive direction were categorized as “unimpaired,” and participants who had indices that were significantly different from zero in the negative direction were categorized as “impaired.”

The Group results accorded with our predictions (FIG. 2): the Younger Group started below zero, and then gradually shifted toward the Good decks as the game progressed. The Older Group did not demonstrate this shift: after the first Trial Block, their performance hovered around the zero-line for the entire task. The statistical analysis of these data yielded the predicted two-way interaction between Age Group and Trial Block ($F(4,312) = 3.65, P < 0.05$). The Age Group ($F(1,78) = 11.89, P < 0.01$) and Trial Block ($F(4,312) = 14.00, P < 0.0001$) main effects were also significant.

Regarding performances of individual participants, in the Younger Group, 37 of 40 participants were “unimpaired,” achieving overall indices significantly above zero (3 were “impaired,” obtaining indices significantly below zero). This outcome is consistent with our previous studies, which have indicated that nearly all younger normal participants perform in an advantageous manner on the IGT (cf.30). In the Older Group, we found that 15 participants were “unimpaired,” obtaining overall indices significantly above zero ($M_{age} = 70.3$ years; 40% female), whereas 14 were “impaired,” obtaining overall indices significantly below zero ($M_{age} = 71.1$ years; 50% female). (Another 11 participants were considered “borderline,” because their indices did not differ significantly from zero in either the positive or negative direction. Because this outcome is inconclusive, we will not consider this subgroup any further.) Thus, consistent with our expectation, a subset of the Older participants performed abnormally on the IGT, failing to shift their selections toward advantageous outcomes. In regard to the proportion of participants in each Age Group who were unimpaired versus impaired, there was a significant difference between the Younger and Older Groups ($\chi^2 = 18.80, P < 0.0001$), reflecting the much higher rate of impaired performance in the Older participants.

We conducted a follow-up analysis, focused specifically on the Older-Unimpaired and Older-Impaired Groups. The performance profiles of these two Groups diverged markedly (FIG. 3). The Older-Unimpaired Group began by selecting more cards from the Bad decks, but then demonstrated a strong and sustained shift toward the Good decks as the task progressed. The Older-Impaired Group did not show this shift, as they chose predominantly from the Bad decks all the way through the task (in a manner reminiscent of patients with ventromedial prefrontal lesions). A 2×5 ANOVA using Group (Older-Unimpaired versus Older-Impaired) as a between-subjects factor and Trial Block (Blocks 1–5) as a within-subjects factor yielded a significant two-way interaction [$F(4,108) = 10.53, P < 0.0001$], substantiating the trends evident in FIGURE 3.^a (The Group ($F(1,27) = 104.83, P < 0.0001$) and Trial Block [$F(4,108) = 3.91, P < 0.05$] main effects were also significant.)

In summary, the findings from this study support the notion that a subset of older individuals has significant difficulty with reasoning and decision making, as indexed by the IGT. This

^aBecause the two Groups differed slightly in Trial Block 1, we used the Block 1 score as a covariate in a 2×4 ANCOVA using the same factors as in the primary ANOVA. The Group \times Trial Block interaction remained significant ($F(3,78) = 8.16, P < 0.0001$).

impairment occurred in the absence of any frank neurologic or psychiatric disease, and there was no evidence that it could be explained by pre-morbid factors (e.g., educational level), overall health status, or weaknesses in other cognitive realms such as attention, memory, or language (confirmed by detailed neuropsychological testing of the participants). Moreover, within the age range subsumed by our Older participant sample (56–85), there was no indication that age per se accounted for the decision-making impairment. The rate of impairment in our sample was not trivial: 14 of 40 older participants were deficient, compared to only 3 of 40 younger participants.

STUDY 2: PSYCHOPHYSIOLOGICAL CORRELATES OF DEFECTIVE DECISION MAKING

Defective decision making in patients with acquired VMPC damage has been discussed in the framework of the *somatic marker hypothesis*, which posits that decision making is often assisted by emotional processes and somatic “markers,” originating not only from the body itself, but also from several large-scale cortical and subcortical brain networks, including the VMPC, amygdala, insular cortices/somatosensory cortices, and possibly the basal ganglia, as well as signals from the peripheral nervous system.^{30,36,37} In previous studies, electrodermal activity, specifically the skin conductance response (SCR), has been used in our laboratory as a dependent measure of somatic state activation and somatic “signaling” activity.³⁸

In previous work, we have shown that healthy, non-elderly individuals generate anticipatory SCRs prior to a Bad deck selection, while age-matched VMPC patients (mean age \cong 44 years) fail to generate such SCRs.³¹ In other words, young participants generate discriminatory anticipatory SCRs during the IGT, with the largest SCRs observed just prior to a Bad deck selection, and smaller SCRs just prior to a Good deck selection. By contrast, VMPC patients generate small and relatively equivalent SCRs to both types of selections, and thus do not display such discrimination.³⁹ These findings have been taken as evidence that the somatic “signaling” that normally facilitates decision making under conditions of uncertainty and risk is disrupted in VMPC patients.

In another study in the current series, our objective was to add an investigation of the psychophysiological correlates of decision making in older adults, to determine whether the integrity of anticipatory SCRs might be compromised in the subset of older individuals that demonstrates impaired IGT performance. We hypothesized that the “somatic signaling” process would be attenuated in the impaired decision makers, but not in the unimpaired ones. Specifically, we predicted that (1) Older-Impaired participants would not generate discriminatory anticipatory SCRs during the IGT; and (2) Older-Unimpaired participants would generate discriminatory anticipatory SCRs during the IGT.

Using the same rationale and procedures as in the previous study (Study 1: Behavioral Correlates of Defective Decision Making), 40 new older adult participants were recruited. Thus, the overall sample comprised 80 healthy, community-dwelling older adults, aged 56–85 (40 previous participants, 40 new participants). The two samples did not differ with respect to demographic variables, such as age, education, and gender distribution ($P_s > 0.05$).

The IGT was administered according to the standard protocol of our laboratory, involving computer administration and psychophysiological (i.e., SCR) measurement. As before, we carried out the following analysis of the IGT behavioral data. Under the assumption that random behavior on the IGT would yield a score of zero for the formula, $[(C + D) - (A + B)]$, we categorized each older adult participant as “Unimpaired” or “Impaired,” based on whether their IGT performance score collapsed across the five Trial Blocks differed significantly from zero, and in which direction, using the binomial test. Participants who had overall performance

scores that were significantly different from zero in the positive direction were categorized as “Unimpaired” on the IGT, and participants who had performance scores that were significantly different from zero in the negative direction were categorized as “Impaired” on the IGT. (As in the previous study, this left a middle group of participants whose scores did not significantly differ from zero in either direction, and we refer to this group as “Borderline.”)

While playing the IGT, participants were connected to a polygraph. SCRs were recorded from two Ag/AgCl electrodes attached to the thenar and hypothenar eminences of each hand. Every turn of a card from any deck coincided with a mark on the SCR polygram. The inter-trial interval was set to 6 s, although, given time for deliberation, the average time between card choices was approximately 10 s.³⁹ For the present study, we were interested in anticipatory SCRs generated during the IGT, and this corresponds to the time window between the *end* of the 5-s period following the choice of a card and *before* the next click of a card (i.e., the time period during which participants are pondering their choice).

The SCR data were acquired through an MP100 WS system (BIOPAC Systems, Inc., Santa Barbara, CA) at the rate of 100 samples per second. The IGT SCR data were analyzed using AcqKnowledge III software (BIOPAC Systems, Inc.) for the MP100 WS system. Quantification of the SCR wave involved elimination of the downward drift using a mathematical transformation function named “Difference,” followed by visual inspection of the wave for experimental artifacts. The primary dependent SCR variable was “area under the curve” in microSiemens per second ($\mu\text{S/s}$), during the “anticipation phase”; again, this was the time window between the end of the 5-s period following choice of a card and before the next click of a card.

Initial descriptive statistics on the SCR data revealed that, within participant group, the means and standard deviations were similar in magnitude (as is common for electrodermal data of this type).⁴⁰ We also noted that, between participant groups, the variances were unequal (i.e., heterogeneity of variance). For these reasons, the SCR data were analyzed with non-parametric techniques. Specifically, we utilized the Wilcoxon matched-pairs signed-ranks test and the Mann–Whitney U test as non-parametric alternatives to the t test and F test, respectively, to analyze the SCR data.

The results of the binomial test revealed 24 Older-Impaired participants and 36 Older-Unimpaired participants. The data from six participants were excluded, in three cases secondary to a lack of measurable SCRs (2 men, 1 woman), and in three cases secondary to experimenter error (3 men). One of those excluded was “Impaired” and five were “Unimpaired,” which left 23 Older-Impaired decision makers and 31 Older-Unimpaired decision makers in the final sample of psychophysiological data.

The first prediction was confirmed. Using Wilcoxon paired samples signed-ranks test, we found that the Older-Impaired participants failed to generate discriminatory anticipatory SCRs ($P = 0.93$); in fact, their anticipatory SCRs were nearly identical for the advantageous and disadvantageous decks. The second prediction was also confirmed. The Older-Unimpaired participants demonstrated discriminatory anticipatory SCRs ($P < 0.05$). Specifically, this Group generated larger amplitude (i.e., greater area under the curve) SCRs to the advantageous decks compared to the disadvantageous decks, as shown in FIGURE 4.

It is important to explore whether these findings can be explained by a basic between-Group difference in overall SCR responsivity. A Mann–Whitney U test failed to demonstrate any reliable between-Group differences ($P_s > 0.05$), as the magnitude of SCRs was generally comparable between the Impaired and Unimpaired participants.

This study provides an extension of our previous work exploring the nature of decision making in healthy older adults.¹ Specifically, we demonstrated that the decision-making defect has a psychophysiological correlate; namely, Older-Impaired participants lacked discriminatory SCRs to advantageous versus disadvantageous choices, whereas Older-Unimpaired participants demonstrated reliable anticipatory psychophysiological discrimination of good and bad choices.

The psychophysiological findings supported our basic hypothesis regarding the absence of somatic “signaling” in the impaired participants. Specifically, the Older-Impaired participants failed to generate discriminatory anticipatory SCRs. It was interesting, though, that the pattern of results was different from that observed previously in patients with bilateral VMPC damage.³⁹ Those patients failed to acquire anticipatory SCRs to either the advantageous or disadvantageous choices. By contrast, the Older-Impaired participants *did* acquire anticipatory SCRs, although those responses did not discriminate good from bad choices.

Interestingly, the Older-Unimpaired participants generated discriminatory anticipatory SCRs, consistent with our second prediction. However, the direction of the anticipatory SCR discrimination was reversed in the Older-Unimpaired participants compared to that found in previous studies involving healthy, non-elderly (young) participants. That is, the Older-Unimpaired participants produced higher-amplitude SCRs to the advantageous decks, while young participants produce higher-amplitude SCRs to the disadvantageous decks. Taken at face value, the pattern of anticipatory discrimination during successful IGT performance differs in important ways for young and older adults.

In conclusion, older adults with strong decision-making abilities, as measured by the IGT, show discriminatory anticipatory SCRs, and it appears that positive (rather than negative) somatic markers play a significant role in shaping their advantageous decisions. By contrast, older adults with poor decision-making abilities do not appear to be differentially influenced by either positive or negative somatic markers, although they may be influenced by both types of markers in a manner unlike patients with acquired VMPC lesions.

STUDY 3: CONSUMER CORRELATES OF DEFECTIVE DECISION MAKING

A growing body of literature in marketing examines age differences in consumer reactions to printed marketing materials, primarily from an information-processing perspective.^{41–46} Such studies have suggested that under certain environmental conditions, older consumers are more likely than younger consumers to miscomprehend and incorrectly use printed marketing information. For example, not only are older adults less likely to decipher implied claims, but older adults are more vulnerable to the “truth effect” (the tendency to believe repeated information more than new information) because older adults have relatively poor context or source memory, but relatively intact familiarity of repeated claims.^{43,44} Furthermore, there is preliminary evidence linking the integrity of the prefrontal cortex to frequently studied consumer behaviors, such as comprehension, information search, and decision making.^{46–48}

In the last study in the current series, we questioned how age differences in reactions to deceptive advertising are related to decision making ability (and potentially the integrity of VMPC structures) (Denburg *et al.*, manuscript submitted for publication). We proposed that IGT performance would predict susceptibility to the influence of deceptive advertising. Specifically, it was predicted that Older-Impaired decision makers would be more vulnerable to deceptive advertising than either Older-Unimpaired or Younger comparison participants. By adopting this neuroscientific perspective, we hoped to understand age differences in consumer behavior at a more fundamental (neural) level, and to refine existing theories.⁴⁹

Using the same rationale, procedures, and participants as in the previous study (Study 1: Behavioral Correlates of Defective Decision Making), 20 Unimpaired Younger adults participated. Additionally, from the earlier study, the 15 Older Adult participants that were labeled as “Unimpaired” and the 14 Older Adults that were “Impaired” also participated. In all, then, there were three Groups: (1) Younger; (2) Older-Unimpaired (good IGT decision makers); and (3) Older-Impaired (bad IGT decision makers). The samples did not differ with respect to demographic variables, such as age, education, and gender distribution ($P > 0.05$). There were two dependent measures, IGT behavioral performance and vulnerability to deceptive advertising.

In a preliminary session, participants individually came to the laboratory to perform the IGT and a battery of neuropsychological tests. At a second testing session on a separate day, we invited each participant to participate in an “advertising study.” In this study, prior to looking through an advertising booklet, they learned that they could take as long as they liked to review the booklet and that we would ask about their opinions of the advertisements later in a written questionnaire.

Participants were exposed to actual advertisements with deceptive and non-deceptive claims. The deceptive claims have been drawn from those cases deemed problematic by the Federal Trade Commission (FTC) as published in *FTC Decisions*, and hence, the advertisements we used had documented external validity. For each FTC advertisement, non-deceptive counterparts were created. Deceptive and non-deceptive advertisements were admixed to create two advertising booklets. A deceptive advertisement is one in which a discrepancy arises between the factual performance of the product and consumers’ beliefs about the product.^{42, 50}

Each advertising booklet contained five advertisements, plus two “control” ads (one at the beginning and the other at the end, in an effort to minimize primary and recency effects). After incidental reading of the advertisement booklet, a questionnaire was administered which examined participants’ (a) purchase intentions and (b) comprehension of claims.⁵² All the advertisements were in color and were professionally designed; none specifically mentioned price. A short paragraph description separated the advertisements. For example, “Please read the following advertisement. It will appear in magazines such as *Women’s Day* and *Sports Illustrated* during the Fall.” To better illustrate how the advertisements differed based on manipulation, we offer the Luggage advertisement as an example and present the Group results.

The manipulation for the Luggage advertisement involved disclosure that the luggage is made in Mexico versus no such disclosure. Both the deceptive and non-deceptive Luggage advertisements contained color pictures and a verbal description of the three-piece luggage set. Both versions started with the headline “Legacy brings you the finest American Quality Luggage.” The FTC wrote that an advertisement that bears the headline “American Quality” is “likely to convey to consumers a claim that the product is of US origin,” and thus would not be compliant with the “Made in the USA standard” if it were of foreign origin, unless the advertisement disclosed where the product was manufactured. So, the non-misleading advertisement contained the statement “After manufacture in Mexico, each piece is carefully inspected in Tennessee at our corporate headquarters before it is shipped to you.” The misleading version made the same claim but omitted the words “in Mexico.”

The comprehension-of-claims variable for the Legacy Luggage was analyzed with a 2×3 ANOVA using advertisement version (Limited Disclosure versus Full Disclosure) as the within-subjects factor and Group (Younger versus Older-Impaired versus Older-Unimpaired) as the between-subjects factor (FIG. 5). We found a significant effect for version [$F(1,43) = 37.27, P < 0.01$] as well as a significant version by Group interaction [$F(2,43) = 3.68, P <$

0.03]. We conducted follow-up *t* tests and found that the Groups who viewed the Legacy Luggage ad that made a full disclosure about where the luggage was made did not differ in their comprehension of claims for the luggage set. However, among the Groups who viewed the deceptive Legacy Luggage ad, which did not disclose where the luggage was made, the Older-Impaired Group was significantly more likely than the Older-Unimpaired Group ($t = 3.44, P < 0.01$) or the Younger Group ($t = 3.56, P < 0.01$) to believe that the Legacy Luggage set was made in the United States.

Similarly, the purchase intentions variable for the Legacy Luggage was analyzed with a 2×3 ANOVA using advertisement version (Limited Disclosure versus Full Disclosure) as the within-subjects factor and Group (Younger versus Older-Impaired versus Older-Unimpaired) as the between-subjects factor (FIG. 6). We found a significant effect for version [$F(1,43) = 5.64, P < 0.03$] as well as a significant version by Group interaction [$F(2,43) = 4.31, P < 0.02$]. We conducted follow-up *t* tests and found that the Groups who viewed the Legacy Luggage ad that made a full disclosure about where the luggage was made did not differ in their purchase intentions for the luggage set. However, among the Groups who viewed the deceptive Legacy Luggage ad that did not disclose where the luggage was made, the Older-Impaired Group was significantly more likely than the Older-Unimpaired Group ($t = 2.7, P < 0.02$) or the Younger Group ($t = 1.99, P < 0.06$) to indicate higher purchase intentions for deceptively advertised luggage. Therefore, we conclude that the Older-Unimpaired participants and the Younger participants responded more similarly to deceptive advertising than the Older-Impaired participants.

This research begins to identify a neuroscientific explanation for age differences in responses to deceptive advertising. Future research is needed to pin down more closely the relationship between decision making performance and age-associated changes in vulnerable brain regions. An important area for future neurobiological and consumer research is to identify the extent to which bad decision makers can recruit or be trained to use compensatory processing to improve accuracy of beliefs and judgments.^{42,45,52}

From a marketing context, these studies suggest that there is considerable heterogeneity in the older consumer market. Prior research has suggested the need for segmenting markets according to lifestyle and other demographic variables using something called "gerontographics."⁵⁴ Our research suggests that the integrity of prefrontal cortex functioning may be one important segmenting variable. Indexing the integrity of prefrontal cortex functioning is not simple, but as neuroscience develops, it may be possible to identify otherwise healthy older adults who have dysfunction in prefrontal cortex. These individuals could be made aware that they may be particularly susceptible to misleading advertising.

CONCLUDING COMMENT

Given the well-documented association between decision making on the IGT and integrity of ventromedial prefrontal structures, we take the current findings as suggestive of the possibility that some ostensibly normal older adults have disproportionate aging of VMPC. To the extent that this turns out to be correct, it has some very important implications. Perhaps the most alarming example is older adults' heightened vulnerability to advertising fraud. In fact, the Federal Bureau of Investigation (FBI) has estimated that there are 14,000 fraudulent telemarketing firms operating in the United States, with 80% of these aiming their activities at older individuals.⁵⁴ Our own work in this area has already provided preliminary suggestion of a link between ventromedial prefrontal dysfunction, faulty decision making, and vulnerability to misleading advertising.

The issue of whether a sizable number of older individuals have decision-making deficits has provocative societal implications. These include not only the aforementioned problem of older persons being targeted by fraudulent advertising, but also the fact that, at a time of heightened vulnerability, these older persons face a host of critical life decisions ranging from driving and housing decisions to choice of medical care and allocation of personal wealth. In fact, it is hard to overemphasize the ramifications of impaired decision making for older adults. From a public policy perspective, our research has immediate implications for the voluntary and regulatory control of advertising.

The series of studies summarized here provides strong support for the notion that some neurologically and psychiatrically healthy older adults can have decision making impairments in the absence of other neuropsychological defects. Whether this finding turns out to have a structural or functional neurologic correlate remains to be seen, but the finding is at least broadly consistent with the frontal lobe hypothesis of aging, articulated by West⁴ and others, and further supported by several recent lines of evidence.^{56,57}

It will be important to tackle these open questions with other neuroscience approaches, including functional imaging (e.g., fMRI), and it will also be important to identify the neuropathologic process or processes that are giving rise to VMPC dysfunction in some older persons. For instance, is this dysfunction a harbinger of a progressive degenerative disease, such as Alzheimer's disease or Pick's disease? Longitudinal work and postmortem neuropathology studies will be needed to help answer such questions. Another intriguing and open question concerns sex differences. Recent work has provided preliminary evidence of sex-related functional asymmetry of the VMPC, whereby in men the right-sided VMPC sector is more important than the left for functions, such as complex decision making, emotional regulation, and social conduct, whereas in women the left-sided VMPC sector appears to be more important than the right for such functions.⁵⁸ Future work in older adults should take into account possible sex differences, and we would predict that such differences may turn out to be a lot more than trivial, at both behavioral and neural levels.

ACKNOWLEDGMENTS

Preparation of this article was supported by a National Institute on Aging Career Development Award (K01 AG022033) and by fellowship funding from the Iowa Scottish Rite Masonic Foundation to N.L.D., and by NIDA Grant R01 DA022549 to D.T.

REFERENCES

1. Denburg NL, Tranel D, Bechara A. The ability to decide advantageously declines prematurely in some normal older persons. *Neuropsychologia* 2005;43:1099–1106. [PubMed: 15769495]
2. Denburg NL, Recknor EC, Bechara A, Tranel D. Psychophysiological anticipation of positive outcomes promotes advantageous decision making in normal older persons. *Int. J. Psychophysiol* 2006;61:19–25. [PubMed: 16426691]
3. West RL. An application of prefrontal cortex function theory to cognitive aging. *Psychol. Bull* 1996;120:272–292. [PubMed: 8831298]
4. West RL. In defense of the frontal lobe hypothesis of cognitive aging. *J. Int. Neuropsychol. Soc* 2000;6:727–729. [PubMed: 11011518]
5. Daigneault S, Braun CMJ, Whitaker HA. Early effects of normal aging on perseverative and non-perseverative prefrontal measures. *Dev. Neuropsychol* 1992;8:99–114.
6. Dempster FN. The rise and fall of the inhibitory mechanism: toward a unified theory of cognitive development and aging. *Dev. Rev* 1992;12:45–75.
7. Hartley AA. Evidence for the selective preservation of spatial selective attention in old age. *Psychol. Aging* 1993;8:371–379. [PubMed: 8216957]
8. Haaland KY, Price L, LaRue A. What does the WMS-III tell us about memory changes with normal aging. *J. Int. Neuropsychol. Soc* 2003;9:89–96. [PubMed: 12570362]

9. Mittenberg W, Seidenberg M, O'Leary DS, DiGiulio DV. Changes in cerebral functioning associated with normal aging. *J. Clin. Exp. Neuropsychol* 1989;11:918–932. [PubMed: 2592531]
10. Moscovitch, M.; Winocur, G. The neuropsychology of memory and aging. In: Craik, FIM.; Salthouse, TA., editors. *The Handbook of Aging and Cognition*. Hillsdale, NJ: Lawrence Erlbaum; 1992. p. 315-372.
11. Robbins TW, James M, Owen AM, et al. A study of performance on tests from the CANTAB battery sensitive to frontal lobe dysfunction in a large sample of normal volunteers: implications for theories of executive functioning and cognitive aging. *J. Int. Neuropsychol. Soc* 1998;4:474–490. [PubMed: 9745237]
12. Shimamura AP, Jurica PJ. Memory interference effects and aging: findings from a test of frontal lobe function. *Neuropsychology* 1994;8:408–412.
13. West RL, Murphy KJ, Armilio ML, et al. Lapses in attention and performance variability reveal age-related increases in fluctuations in executive control. *Brain Cogn* 2002;49:402–419. [PubMed: 12139961]
14. Whelihan WM, Leshner EL. Neuropsychological changes in frontal functions with age. *Dev. Neuropsychol* 1985;1:371–380.
15. Coffey CE, Wilkinson WE, Parashos IA, et al. Quantitative cerebral anatomy of the aging human brain: a cross-sectional study using magnetic resonance imaging. *Neurology* 1992;42:527–536. [PubMed: 1549213]
16. Cowell PE, Turetsky BI, Gur RC, et al. Sex differences in aging of the human frontal and temporal lobes. *J. Neurosci* 1994;14:4748–4755. [PubMed: 8046448]
17. Jernigan TL, Archibald SL, Fennema-Notestine C, et al. Effects of age on tissues and regions of the cerebrum and cerebellum. *Neurobiol. Aging* 2001;22:581–594. [PubMed: 11445259]
18. Raz N, Gunning FM, Head D, et al. Selective aging of the human cerebral cortex observed in vivo: differential vulnerability of the prefrontal gray matter. *Cereb. Cortex* 1997;7:268–282. [PubMed: 9143446]
19. Raz N, Gunning-Dixon FM, Acker JD. Neuroanatomical correlates of cognitive aging: evidence from structural magnetic resonance imaging. *Neuropsychology* 1998;12:95–114. [PubMed: 9460738]
20. Resnick SM, Pham DL, Kraut MA, et al. Longitudinal magnetic resonance imaging studies of older adults: a shrinking brain. *J. Neurosci* 2003;23:3295–3301. [PubMed: 12716936]
21. Salat DH, Kaye JA, Janowsky JS. Selective preservation and degeneration within the prefrontal cortex in aging and Alzheimer's disease. *Arch. Neurol* 2001;58:1403–1408. [PubMed: 11559311]
22. Gur RC, Gur RE, Orbist WD, et al. Age and regional cerebral blood flow at rest and during cognitive activity. *Arch. Gen. Psychiat* 1987;44:617–621. [PubMed: 3606327]
23. Melamed E, Lavy S, Shlomo B, et al. Reduction in regional cerebral blood flow during normal aging in man. *Stroke* 1980;11:31–34. [PubMed: 7355426]
24. Band GPH, Ridderinkof KR, Segalowitz S. Explaining neurocognitive aging: Is one factor enough? *Brain Cogn* 2002;49:259–267. [PubMed: 12139953]
25. Greenwood PM. The frontal aging hypothesis evaluated. *J. Int. Neuropsychol. Soc* 2000;6:705–726. [PubMed: 11011517]
26. *Protecting Seniors from Fraud, Hearing before the Special Committee on Aging, United States Senate, 106th Congress, 2nd Sess.* Washington, DC: U.S. Government Printing Office; 2000.
27. Eslinger PJ, Damasio AR. Severe disturbance of higher cognition after bilateral frontal lobe ablation: Patient EVR. *Neurology* 1985;35:1731–1741. [PubMed: 4069365]
28. Bechara A, Damasio AR, Damasio H, Anderson SW. Insensitivity to future consequences following damage to human prefrontal cortex. *Cognition* 1994;50:7–15. [PubMed: 8039375]
29. Bechara A, Damasio H, Damasio AR. Emotion, decision making, and the orbitofrontal cortex. *Cereb. Cortex* 2000;10:295–307. [PubMed: 10731224]
30. Bechara A, Tranel D, Damasio H. Characterization of the decision making deficit of patients with ventromedial prefrontal cortex lesions. *Brain* 2000;123:2189–2202. [PubMed: 11050020]
31. Ernst M, Bolla K, Mouratidis M, et al. decision making in a risk-taking task: A PET study. *Neuropsychopharmacology* 2002;26:682–691. [PubMed: 11927193]

32. Schmitt WA, Brinkley CA, Newman JP. Testing Damasio's somatic marker hypothesis with psychopathic individuals: risk takers or risk averse? *J. Abnorm. Psychol* 1999;108:538–543. [PubMed: 10466278]
33. Schaie, KW. Intellectual development in adulthood. In: Birren, JE.; Schaie, KW., editors. *Handbook of Psychology and Aging*. San Diego, CA: Academic Press; 1996. p. 266-286.
34. Tranel D, Benton A, Olson K. A 10-year longitudinal study of cognitive changes in elderly persons. *Dev. Neuropsychol* 1997;13:87–96.
35. Damasio, AR. *Descartes' Error: emotion, Reason, and the Human Brain*. New York: Grosset/Putnam; 1994.
36. Damasio AR. The somatic marker hypothesis and the possible functions of the prefrontal cortex. *Phil. Trans. Roy. Soc. London Biol* 1996;351:1413–1420. [PubMed: 8941953]
37. Tranel, D. Electrodermal activity in cognitive neuroscience: neuroanatomical and neuropsychological correlates. In: Lane, RD.; Nadel, L., editors. *Cognitive Neuroscience of Emotion*. New York: Oxford University Press; 2000. p. 192-224.
38. Bechara A, Tranel D, Damasio H, Damasio AR. Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex. *Cereb. Cortex* 1996;6:215–225. [PubMed: 8670652]
39. Venables, PH.; Christie, MJ. Mechanisms and techniques. In: Prokasy, WF.; Raskin, DC., editors. *Electrodermal Activity in Psychological Research*. New York: Academic Press; 1973. p. 1-123.
40. Cole C, Gaeth G. Cognitive and age-related differences in the ability to use nutritional information in a complex environment. *J. Market. Res* 1990;27:175–184.
41. Cole C, Houston M. Encoding and medial effects on consumer learning deficiencies in the elderly. *J. Market. Res* 1987;24:55–63.
42. Gaeth G, Heath TB. The cognitive processing of misleading advertising in young and old adults: assessment and training. *J. Consum. Res* 1987;14:43–54.
43. Law S, Hawkins SA, Craik FIM. Repetition-induced belief in the elderly: rehabilitating age-related memory deficits. *J. Consum. Res* 1998;25:91–107.
44. Skurnik I, Yoon C, Park DC, Schwarz N. How warnings about false claims become recommendations. *J. Consum. Res* 2005;31:713–724.
45. Yoon C. Age differences in consumers' processing strategies: an investigation of moderating influences. *J. Consum. Res* 1997;24:329–342.
46. Martin-Loeches M, Casado P, Hinojosa JA, et al. Higher-order activity beyond the word level: cortical dynamics of simple transitive sentence. *Brain Lang* 2005;92:332–348. [PubMed: 15721965]
47. Fellows LK. Deciding how to decide: ventromedial frontal lobe damage affects information acquisition in multi-attribute decision making. *Brain* 2006;129:944–952. [PubMed: 16455794]
48. Johnson MK, Mitchell KJ, Raye CL, Greene EJ. An age-related deficit in prefrontal cortical function associated with refreshing information. *Psychol. Sci* 2004;15:127–132. [PubMed: 14738520]
56. Shiv B, Loewenstein G, Bechara A, et al. Investment behavior and the dark side of emotion. *Psychol. Sci* 2005;16:435–439. [PubMed: 15943668]
50. Aditya RN. The psychology of deception in marketing: a conceptual framework for research and practice. *Psychol. Market* 2001;18:735–761.
51. Olson JC, Dover PA. Cognitive effects of deceptive advertising. *J. Market. Res* 1978;15:29–38.
52. Williams P, Drolet A. Age-related differences in responses to emotional advertisements. *J. Consum. Res* 2005;32:343–354.
53. Moschis, GP. *Gerontographics: Life-Stage Segmentation for Marketing Strategy Development*. Westport, CT: Greenwood Publishing; 1996.
54. AMERICAN ASSOCIATION OF RETIRED PERSONS. *Telemarketing Fraud and Older Americans: An AARP Survey*. Washington, DC: AARP; 1996.
55. Head D, Snyder AZ, Gitton LE, et al. Frontal-hippocampal double dissociation between normal aging and Alzheimer's disease. *Cereb. Cortex* 2005;15:732–739. [PubMed: 15371293]
56. Lamar M, Resnick SM. Aging and prefrontal functions: dissociating orbitofrontal and dorsolateral abilities. *Neurobiol. Aging* 2004;25:553–558. [PubMed: 15013577]

57. Tranel D, Damasio H, Denburg NL, Bechara A. Does gender play a role in functional asymmetry of ventromedial prefrontal cortex? *Brain* 2005;128:2872–2881. [PubMed: 16195242]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

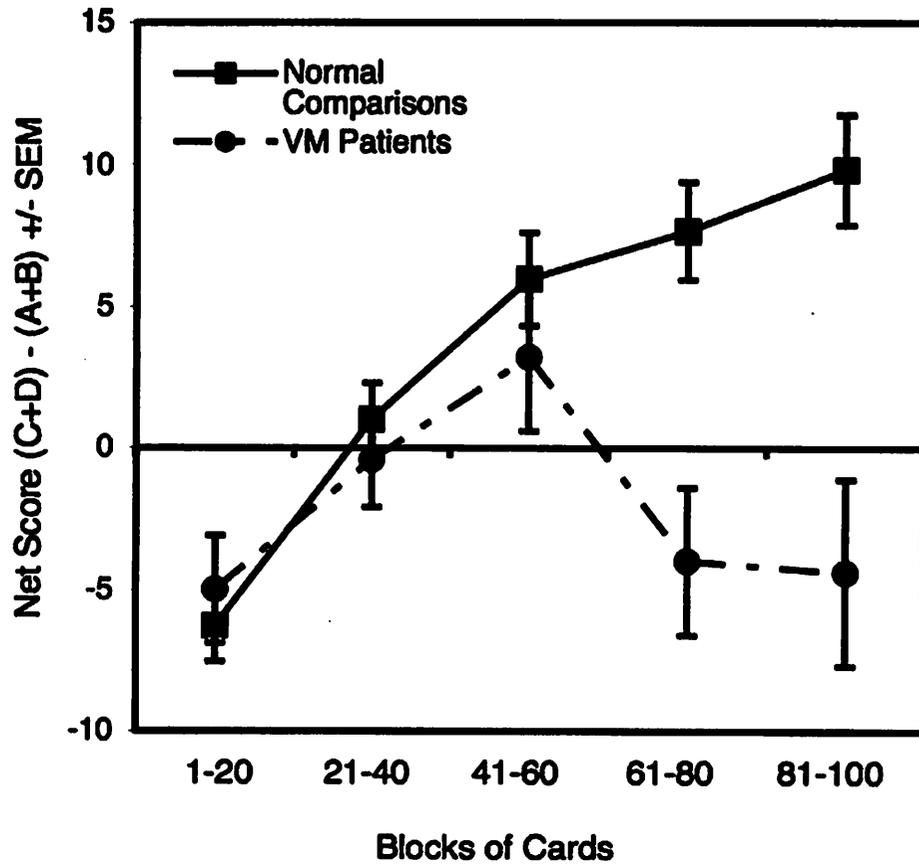


FIGURE 1. Decision-making performance on the IGT in patients with acquired damage to VMPC and demographically matched normal comparisons participants, graphed as a function of Trial Block (\pm SEM, standard error of the mean).

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

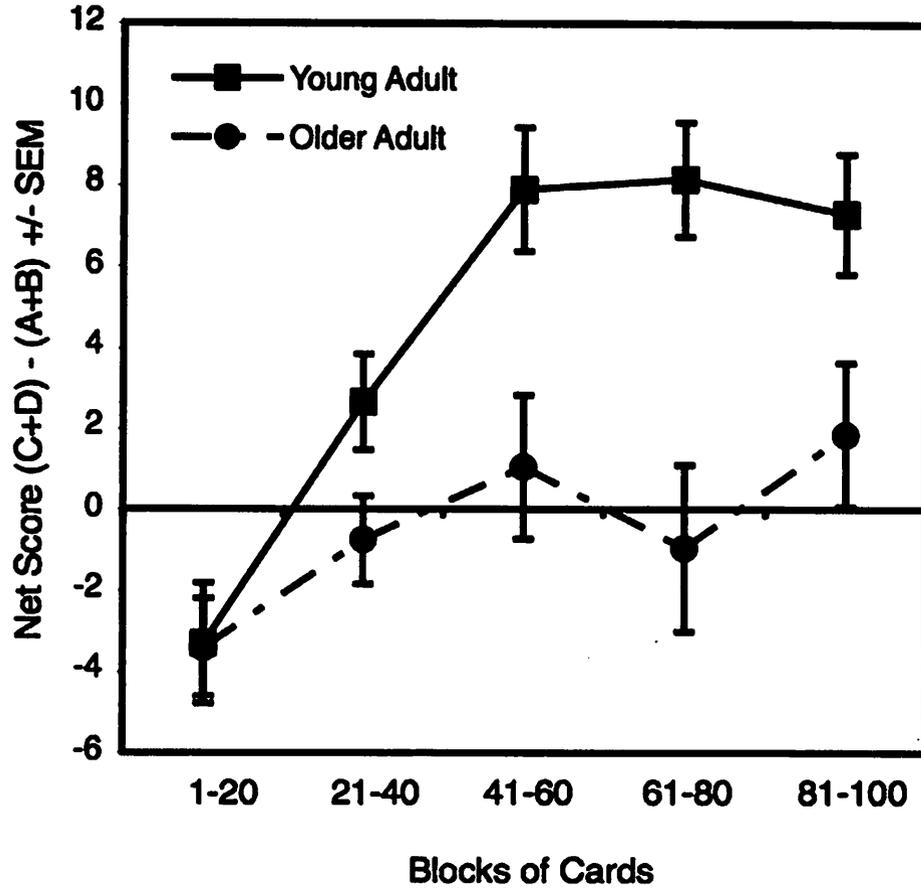


FIGURE 2. Decision-making performance on the IGT in Younger and Older participants, graphed as a function of Trial Block (\pm SEM).

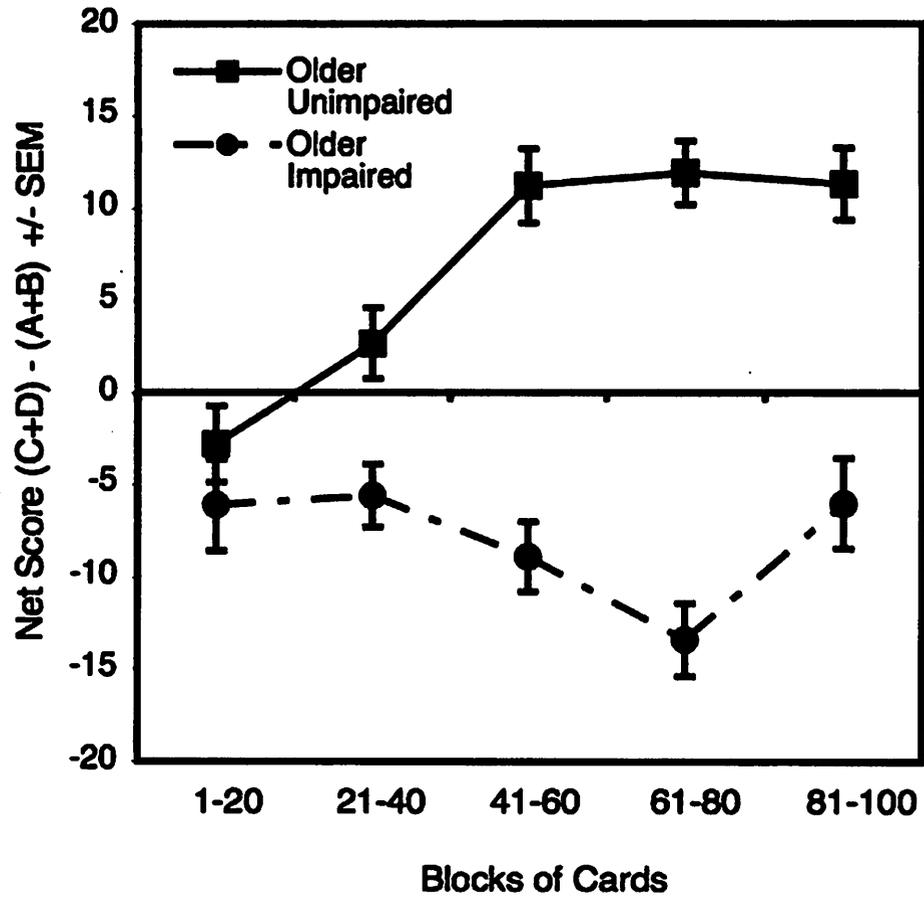


FIGURE 3. Decision-making performance on the IGT in Older-Unimpaired participants and Older-Impaired participants, graphed as a function of Trial Block (\pm SEM).

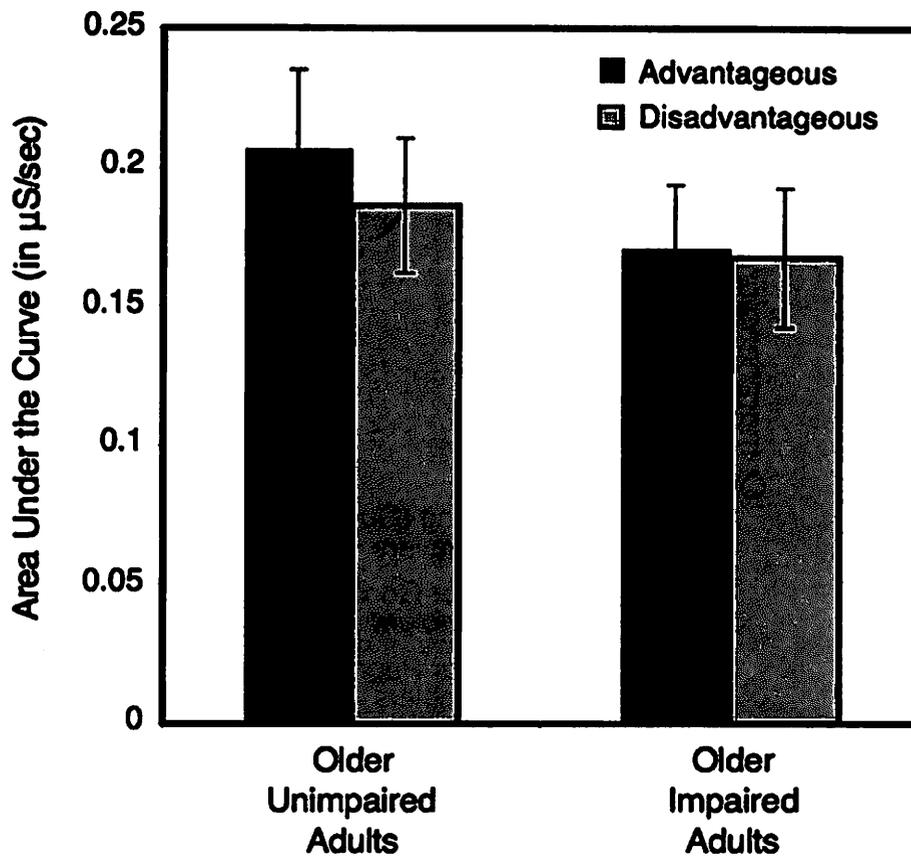


FIGURE 4. Mean (\pm SEM) anticipatory SCRs in microSiemens (μ S) as measured during the IGT. Data are presented by Group (Older-Unimpaired versus Older-Impaired) and by Deck Type (Good versus Bad).

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

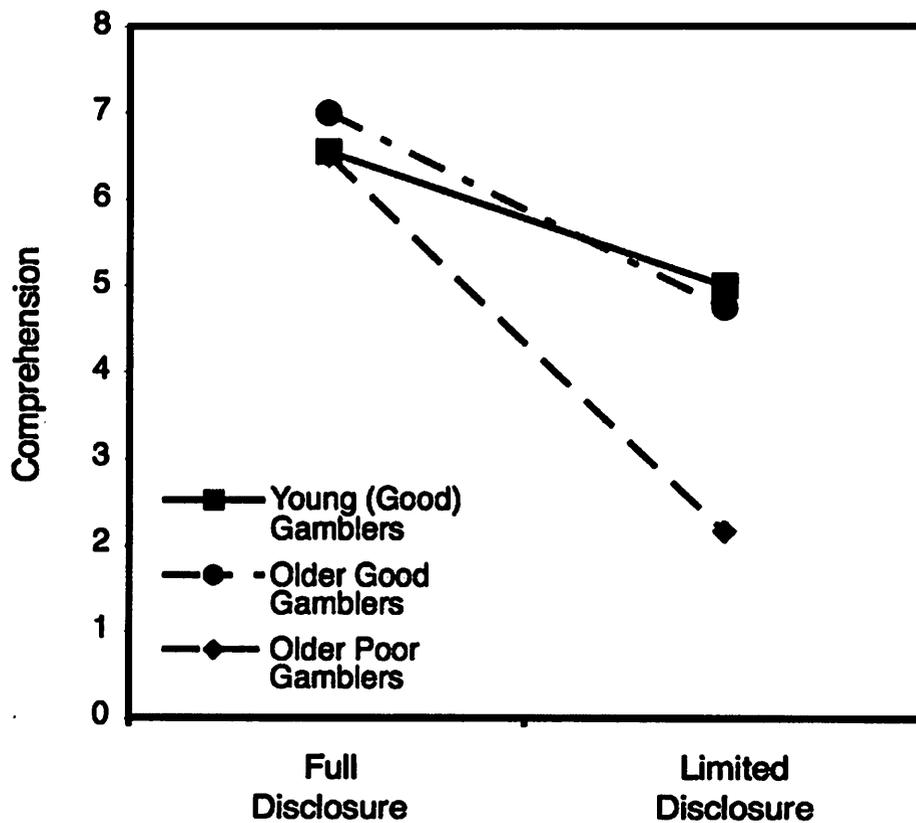


FIGURE 5. Mean comprehension of claims response. Data are presented by Group (Older-Unimpaired versus Older-Impaired versus Younger) and by Advertisement Version (Full Disclosure versus Limited Disclosure).

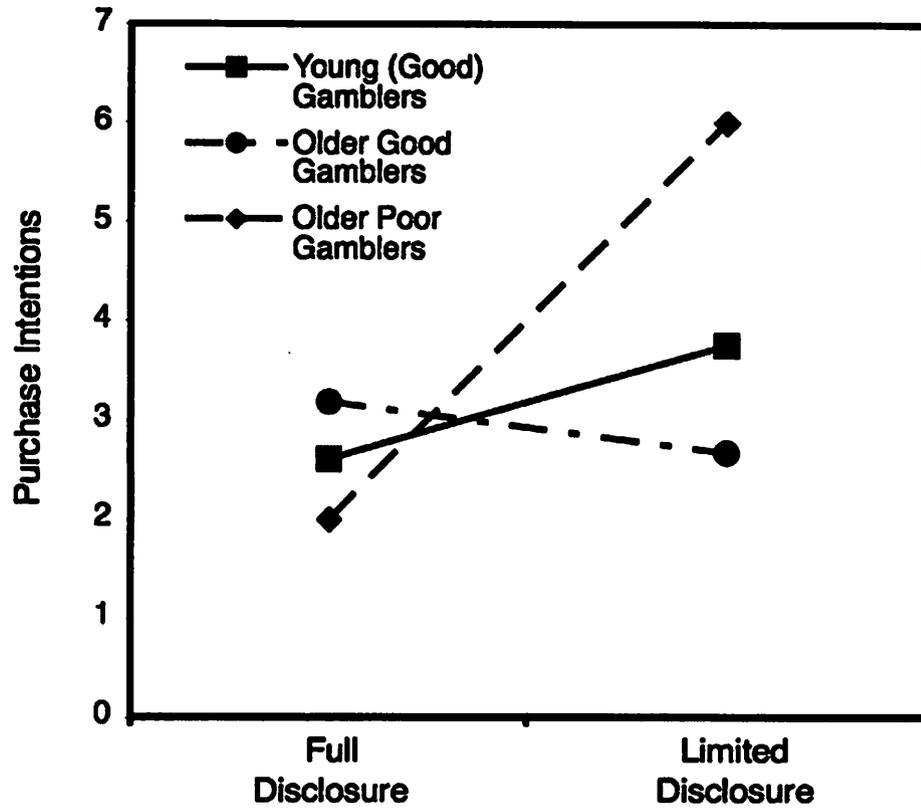


FIGURE 6. Mean purchase intentions response. Data are presented by Group (Older-Unimpaired versus Older-Impaired versus Younger) and by advertisement version (Full Disclosure versus Limited Disclosure).

Shasta County RSVP

	Yes	Somewhat	Not at all
Did you learn anything?	44	5	1

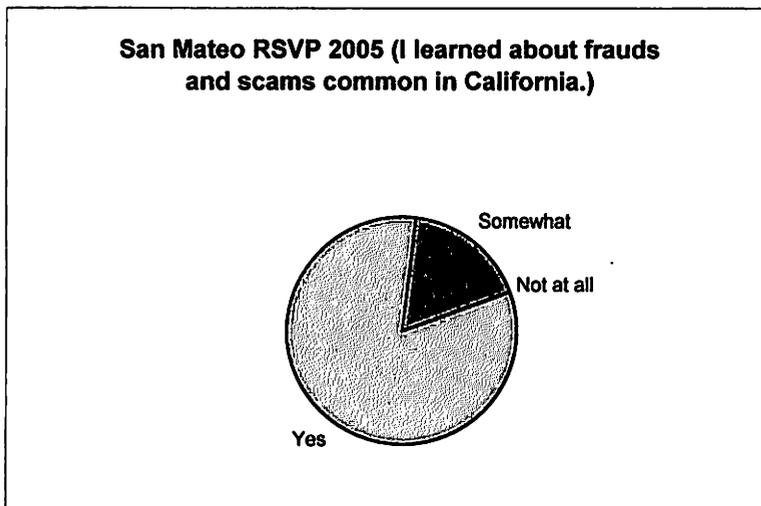
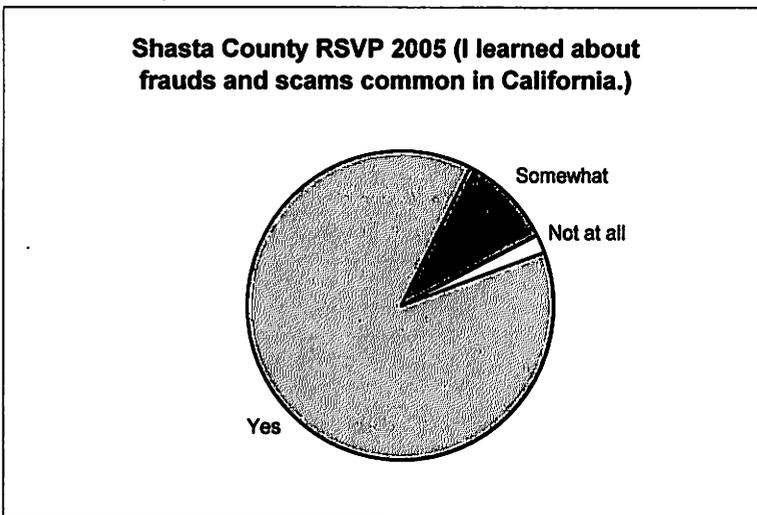
San Mateo RSVP

	Yes	Somewhat	Not at all
Did you learn anything?	33	7	0

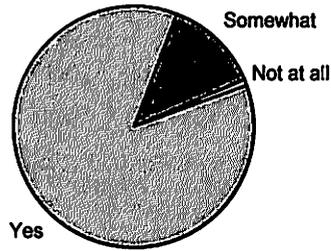
RSVP of San Francisco

	Yes	Somewhat	Not at all
Did you learn anything?	223	33	2
Total	300	45	3

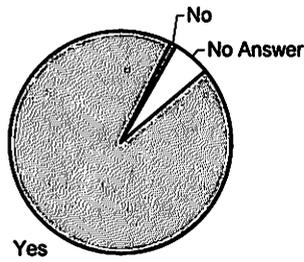
2005 Graphs



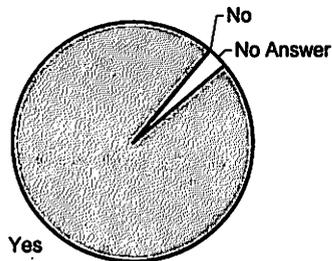
RSVP of San Francisco 2005 (I learned about frauds and scams common in California.)



RSVP West Valley 2005 (Has today's presentation provided useful information to help you avoid becoming a future victim?)



RSVP West Valley 2005 (Were you given a clear explanation of the SAIF program?)



California Department of Corporations Seniors Against Investment Fraud Evaluations: CY 2006

For 2006, 3 versions of the SAIF Evaluation Form were used:

I. New Evaluation Form (2006):

Did you receive a clear explanation of the purpose of the SAIF program?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)

Has today's presentation provided useful information to help you avoid being a victim of fraud?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)

II. Original Evaluation Form (2005):

I learned about frauds and scams common in California.
Yes Somewhat Not at all

III. RSVP West Valley Evaluation Form:

Were you given a clear explanation of the purpose of the SAIF program?
 (Circle one)
 Yes No

Has today's presentation provided useful information to help you avoid becoming a future victim?
 Yes No

Summary

New Evaluation Form (2006)	Excellent	Very Good	Good	Fair	Poor	Total # of evals
Did you receive a clear explanation of the purpose of the SAIF program?	485	224	124	16	6	855
Percent	56.7%	26.2%	14.5%	1.9%	0.7%	
Has today's presentation provided useful information to help you avoid being a victim of fraud?	521	202	113	12	5	853
Percent	61.1%	23.7%	13.2%	1.4%	0.6%	

Original Form	Yes	Somewhat	Not at all	Total # of evals
I learned about frauds and scams common in California	283	26	4	313
Percent	90.4%	8.3%	1.3%	

RSVP West Valley Form	Yes	No	No Answer	Total # of evals
Were you given a clear explanation of the purpose of the SAIF program?	237	6	2	245
Percent	96.7%	2.4%	0.8%	
Has today's presentation provided useful information to help you avoid becoming a future victim?	225	15	5	245
Percent	91.8%	6.1%	2.0%	

2006 - Breakdown

Contractor Name

RSVP West Valley

	Yes	No	No Answer		
Clear explanation?	237	6	2	Total	
Provided useful information?	225	15	5	Total	
Clarity rating	Excellent 33	Very Good 18	Good 5	Fair 1	Poor 0
Rating on Information provided	35	17	4	1	0

Shasta County RSVP

	Yes	Somewhat	Not at all		
Did you learn anything?	81	14	0		

Council on Aging of OC

	Yes	Somewhat	Not at all		
Did you learn anything?	119	5	1		

RSVP of San Francisco

	Yes	Somewhat	Not at all		
Did you learn anything?	12	2	1		
Clarity rating	Excellent 98	Very Good 59	Good 46	Fair 7	Poor 3
Rating on Information provided	113	50	44	5	1

Kings/Tulare RSVP

	Yes	Somewhat	Not at all		
Did you learn anything?	13	1	1		
Clarity rating	Excellent 86	Very Good 29	Good 41	Fair 5	Poor 0
Rating on Information provided	93	31	32	5	0

San Mateo RSVP

Did you learn anything?	Yes 58	Somewhat 4	Not at all 1		
Clarity rating	Excellent 156	Very Good 76	Good 22	Fair 1	Poor 0
Rating on Information provided	165	66	24	0	0

County of Riverside (CARE)

Clarity rating	Excellent 16	Very Good 6	Good 2	Fair 0	Poor 0
Rating on Information provided	15	7	2	0	0

San Diego RSVP

Clarity rating	Excellent 17	Very Good 13	Good 2	Fair 1	Poor 0
Rating on Information provided	16	13	4	0	0

**San Joaquin RSVP
Human Services Agency**

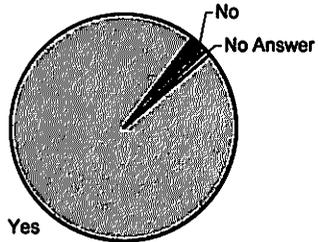
Clarity rating	Excellent 42	Very Good 8	Good 4	Fair 0	Poor 1
Rating on Information provided	42	8	2	0	1

**California Alliance for Retired
Americans (CARA) RSVP**

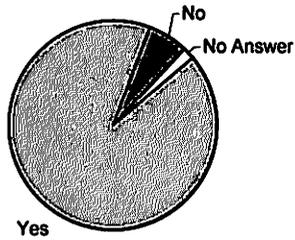
Clarity rating	Excellent 37	Very Good 15	Good 2	Fair 1	Poor 2
Rating on Information provided	42	10	1	1	3

2006 - Graphs

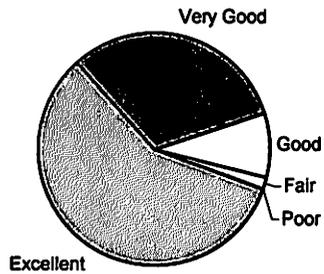
RSVP West Valley 2006 (Were you given a clear explanation of the SAIF program?)



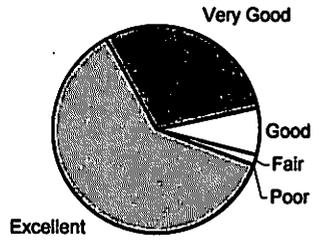
RSVP West Valley 2006 (Has today's presentation provided useful information to help you avoid becoming a future victim?)



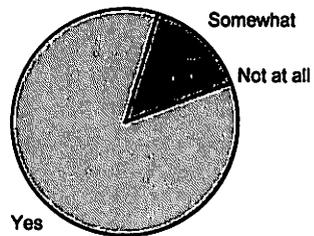
RSVP West Valley 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



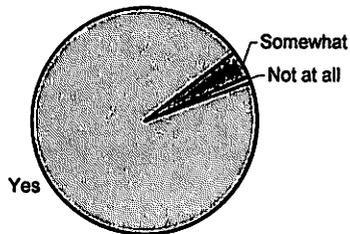
RSVP West Valley 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



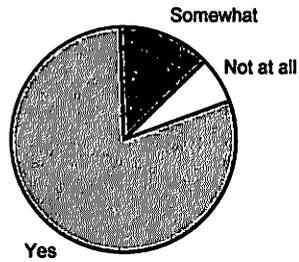
Shasta County RSVP 2006 (I learned about frauds and scams common in California.)



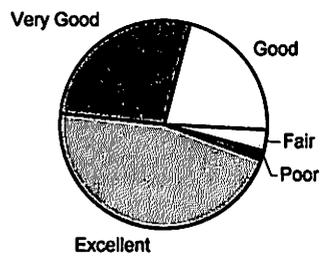
Council on Aging of OC 2006 (I learned about frauds and scams common in California.)



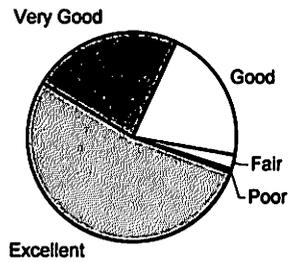
RSVP of San Francisco 2006 (I learned about frauds and scams common in California.)



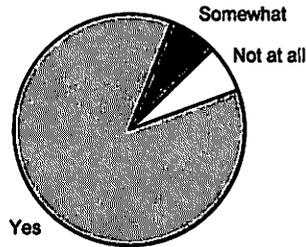
RSVP of San Francisco 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



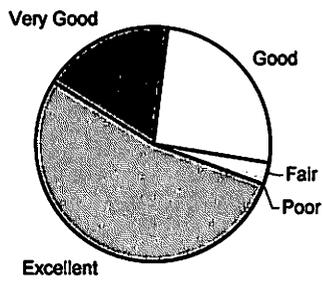
RSVP of San Francisco 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



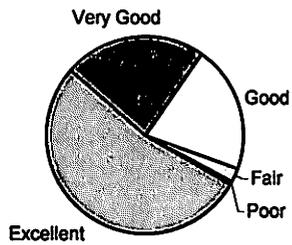
Kings/Tulare RSVP 2006 (I learned about frauds and scams common in California.)



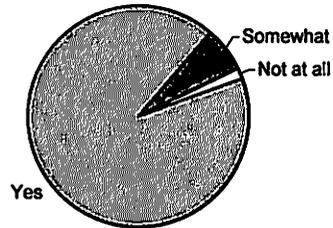
Kings/Tulare RSVP 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



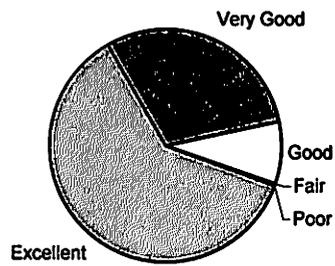
Kings/Tulare RSVP 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



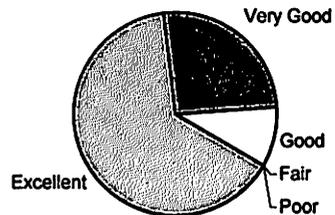
San Mateo RSVP 2006 (I learned about frauds and scams common in California.)



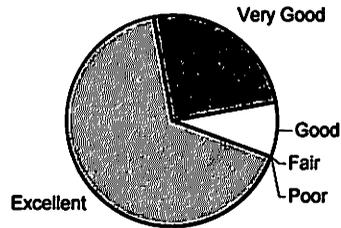
San Mateo RSVP 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



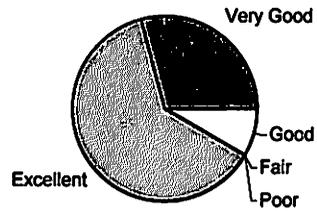
San Mateo RSVP 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



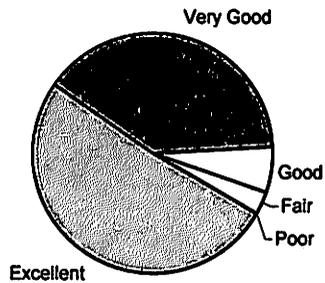
County of Riverside (CARE Program) 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



County of Riverside (CARE Program) 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



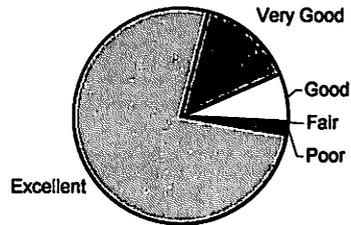
San Diego RSVP 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



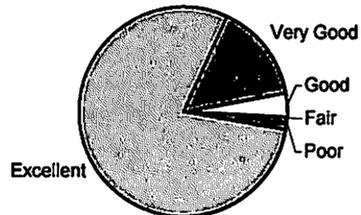
San Diego RSVP 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



San Joaquin RSVP (HSA) 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



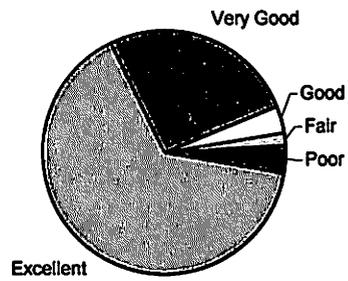
San Joaquin RSVP (HSA) 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



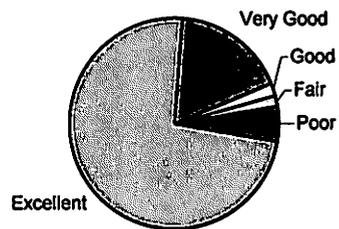
CARA RSVP 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)

Very Good

CARA RSVP 2006 (Did you receive a clear explanation of the purpose of the SAIF program?)



CARA RSVP 2006 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



California Department of Corporations Seniors Against Investment Fraud Evaluations: CY 2007

For 2007, 1 version of the SAIF Evaluation Form was used:

I. New Evaluation Form (2007):
 Did you receive a clear explanation of the purpose of the SAIF program?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)
 Has today's presentation provided adequate information to help you avoid being a victim of fraud?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)

Summary

New Evaluation Form (2007)	Excellent	Very Good	Good	Fair	Poor	Total # of evals
Did you receive a clear explanation of the purpose of the SAIF program?	457	121	61	10	5	654
Percent	69.9%	18.5%	9.3%	1.5%	0.8%	
Has today's presentation provided useful information to help you avoid being a victim of fraud?	458	139	42	9	6	654
Percent	70.0%	21.3%	6.4%	1.4%	0.9%	

2007 - Breakdown

Contractor Name

RSVP West Valley

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	44	9	2	0	0
Rating on Information provided	45	9	1	0	0

RSVP of San Francisco

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	43	11	20	1	0
Rating on Information provided	40	18	16	0	1

Kings/Tulare RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	164	48	17	1	0
Rating on Information provided	165	50	12	2	1

San Mateo RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	89	34	13	7	5
Rating on Information provided	95	34	10	5	4

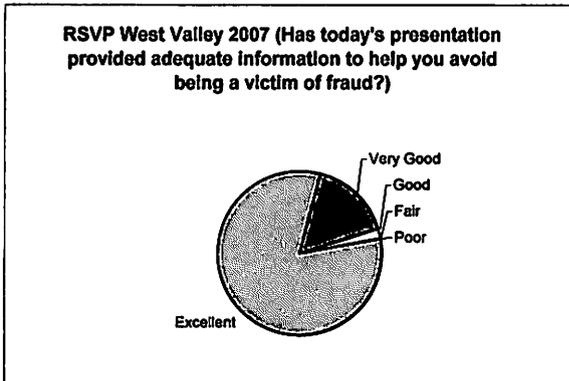
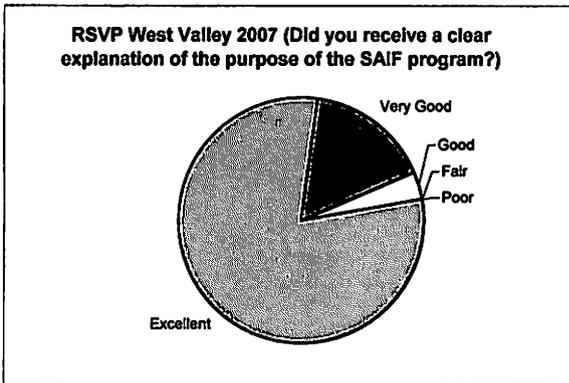
**San Joaquin RSVP
Human Services Agency**

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	112	15	4	0	0
Rating on Information provided	105	23	2	1	0

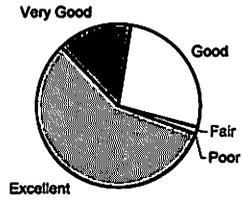
Seniors First RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	5	4	5	1	0
Rating on Information provided	8	5	1	1	0

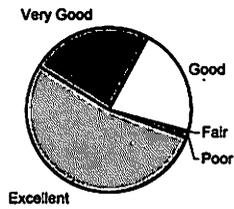
2007 Graphs



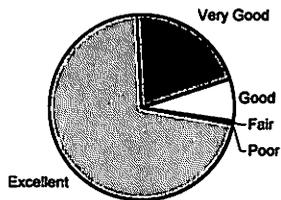
RSVP of San Francisco 2007 (Did you receive a clear explanation of the purpose of the SAIF program?)



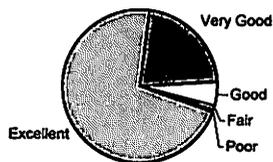
RSVP of San Francisco 2007 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



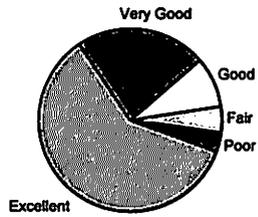
Kings/Tulare RSVP 2007 (Did you receive a clear explanation of the purpose of the SAIF program?)



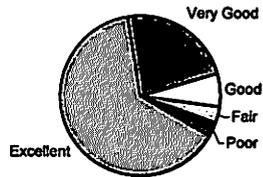
Kings/Tulare RSVP 2007 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



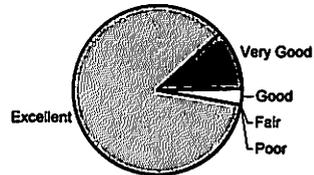
San Mateo RSVP 2007 (Did you receive a clear explanation of the purpose of the SAIF program?)



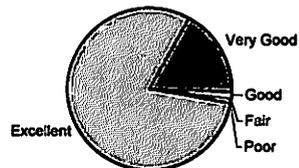
San Mateo RSVP 2007 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



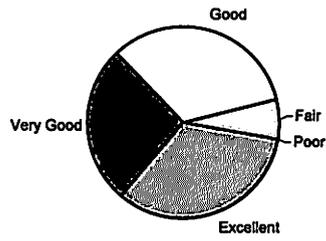
San Joaquin RSVP (HSA) 2007 (Did you receive a clear explanation of the purpose of the SAIF program?)



San Joaquin RSVP (HSA) 2007 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



Seniors First RSVP 2007 (Did you receive a clear explanation of the purpose of the SAIF program?)



Seniors First RSVP 2007 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



California Department of Corporations Seniors Against Investment Fraud Evaluations: CY 2008

For 2008, 1 version of the SAIF Evaluation Form was used:

I. New Evaluation Form (2008):
 Did you receive a clear explanation of the purpose of the SAIF program?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)
 Has today's presentation provided adequate information to help you avoid being a victim of fraud?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)

Summary

New Evaluation Form (2008)	Excellent	Very Good	Good	Fair	Poor	Total # of evals
Did you receive a clear explanation of the purpose of the SAIF program?	1042	656	216	21	8	1943
Percent	53.6%	33.8%	11.1%	1.1%	0.4%	
Has today's presentation provided useful information to help you avoid being a victim of fraud?	1096	645	176	21	5	1943
Percent	56.4%	33.2%	9.1%	1.1%	0.3%	

2008 - Breakdown

Contractor Name

RSVP West Valley

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	265	120	43	3	0
Rating on Information provided	299	108	22	2	0

Golden Umbrella

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	60	54	18	2	0
Rating on Information provided	61	62	9	2	0

Kings/Tulare RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	346	269	64	7	5
Rating on Information provided	359	261	62	5	4

San Mateo RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	52	30	8	1	1
Rating on Information provided	57	27	7	1	0

**San Joaquin RSVP
Human Services Agency**

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	143	56	23	0	0
Rating on Information provided	144	54	20	3	1

Council on Aging - OC

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	31	23	14	6	0
Rating on Information provided	30	23	17	4	0

Oxnard RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	53	38	15	0	0
Rating on Information provided	50	39	17	0	0

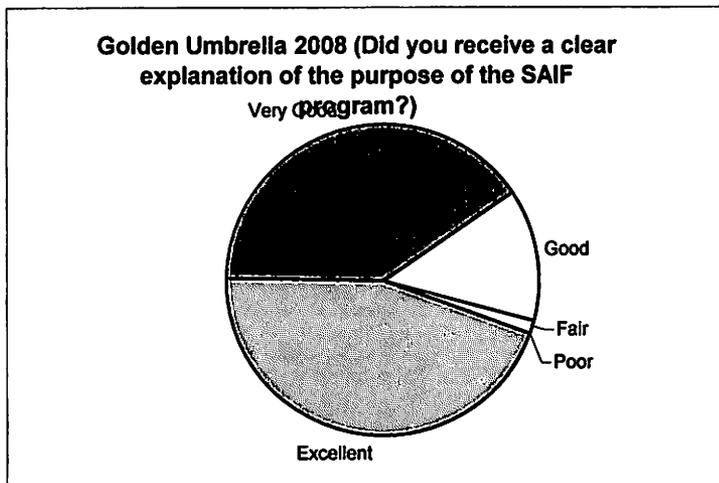
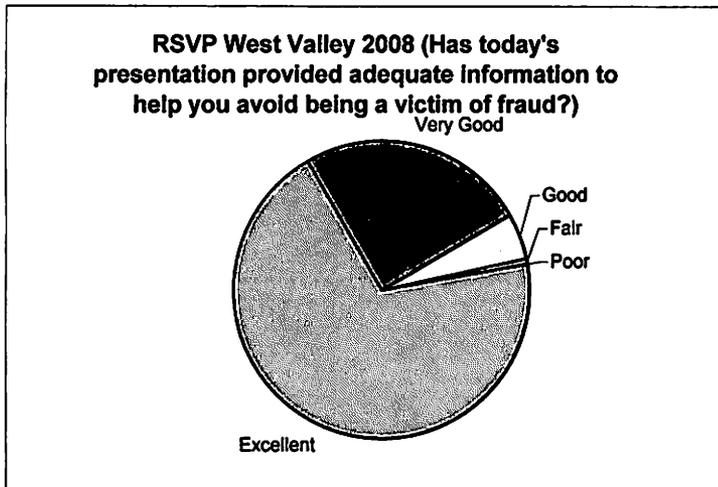
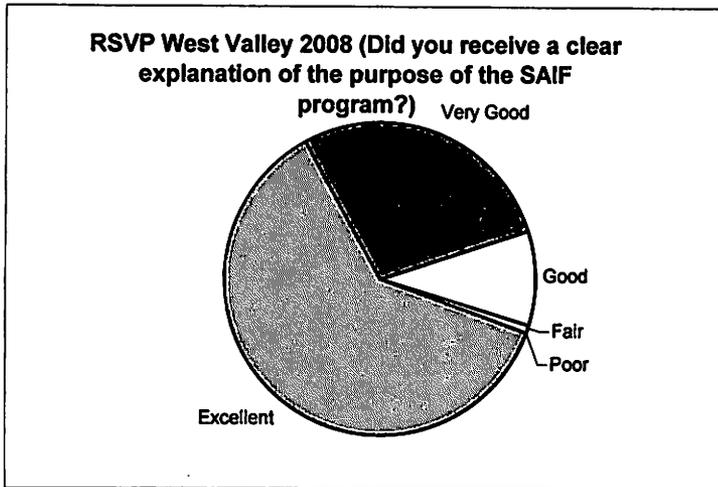
San Diego RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	63	47	24	1	2
Rating on Information provided	68	48	17	4	0

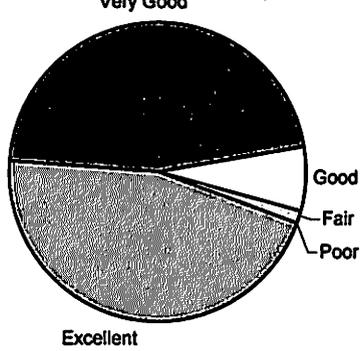
Long Beach RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	29	19	7	1	0
Rating on Information provided	28	23	5	0	0

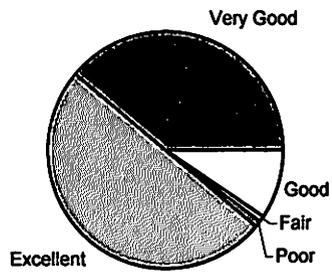
2008 Graphs



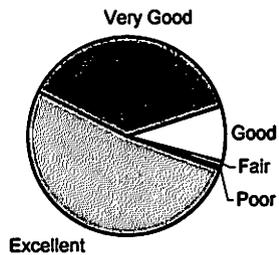
Golden Umbrella 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



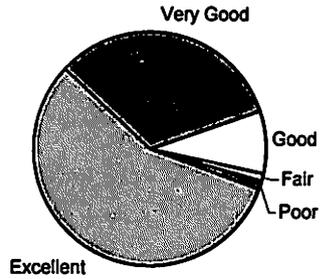
Kings/Tulare RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



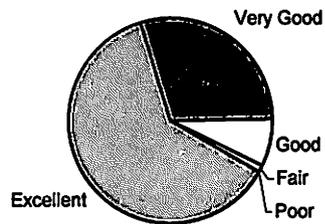
Kings/Tulare RSVP 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



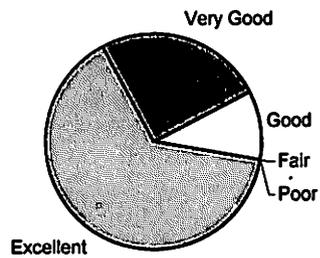
San Mateo RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



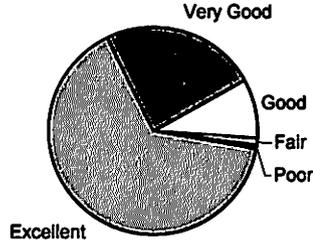
San Mateo RSVP 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



San Joaquin RSVP (HSA) 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



San Joaquin RSVP (HSA) 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



Council on Aging - OC 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



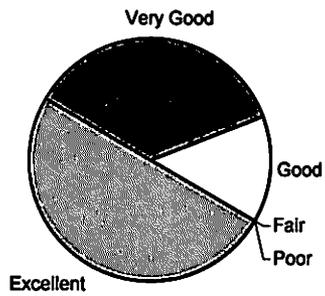
Council on Aging - OC 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



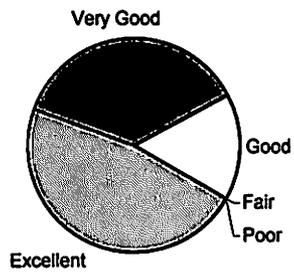
Oxnard RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)

Very Good

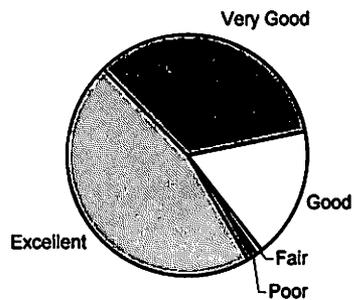
Oxnard RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



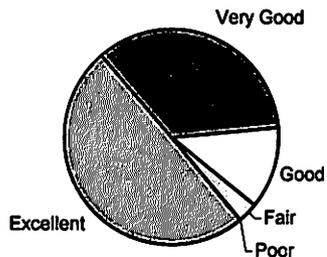
Oxnard RSVP 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



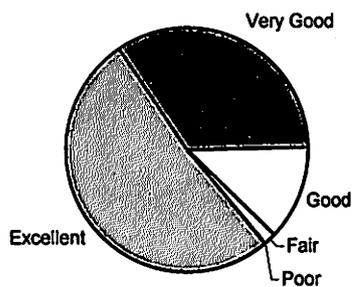
San Diego RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



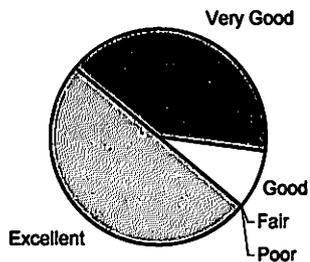
San Diego RSVP 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



Long Beach RSVP 2008 (Did you receive a clear explanation of the purpose of the SAIF program?)



Long Beach RSVP 2008 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



California Department of Corporations Seniors Against Investment Fraud Evaluations: CY 2009

For 2009, 1 version of the SAIF Evaluation Form was used:

I. New Evaluation Form (2009):
 Did you receive a clear explanation of the purpose of the SAIF program?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)
 Has today's presentation provided adequate information to help you avoid being a victim of fraud?
 Poor(1) Fair(2) Good(3) Very Good(4) Excellent(5)

Summary

New Evaluation Form (2009)	Excellent	Very Good	Good	Fair	Poor	Total # of evals
Did you receive a clear explanation of the purpose of the SAIF program?	876	473	116	10	2	1477
Percent	59.3%	32.0%	7.9%	0.7%	0.1%	
Has today's presentation provided useful information to help you avoid being a victim of fraud?	899	463	98	12	5	1477
Percent	60.9%	31.3%	6.6%	0.8%	0.3%	

2009 - Breakdown

Contractor Name

RSVP West Valley

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	304	146	43	2	0
Rating on Information provided	316	145	31	3	0

Golden Umbrella

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	143	78	22	1	0
Rating on Information provided	137	83	21	3	0

Kings/Tulare RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	161	73	28	5	1
Rating on Information provided	173	70	19	4	2

San Francisco/Alameda RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	67	39	0	0	0
Rating on Information provided	62	41	3	0	0

**San Joaquin RSVP
Human Services Agency**

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	24	39	1	0	0
Rating on Information provided	28	27	8	0	1

Council on Aging - OC

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	23	20	1	1	1
Rating on Information provided	22	22	0	0	2

Oxnard RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	2	3	1	0	0
Rating on Information provided	4	1	1	0	0

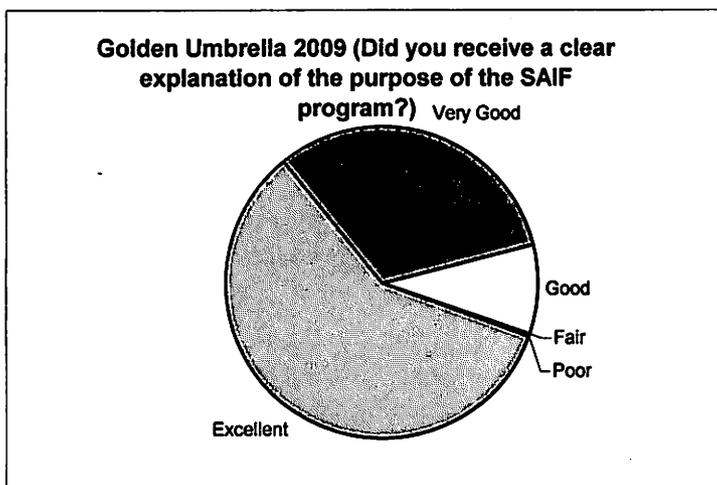
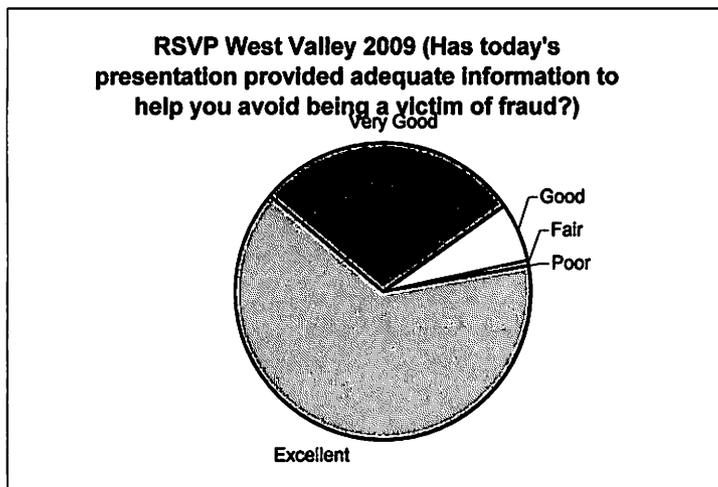
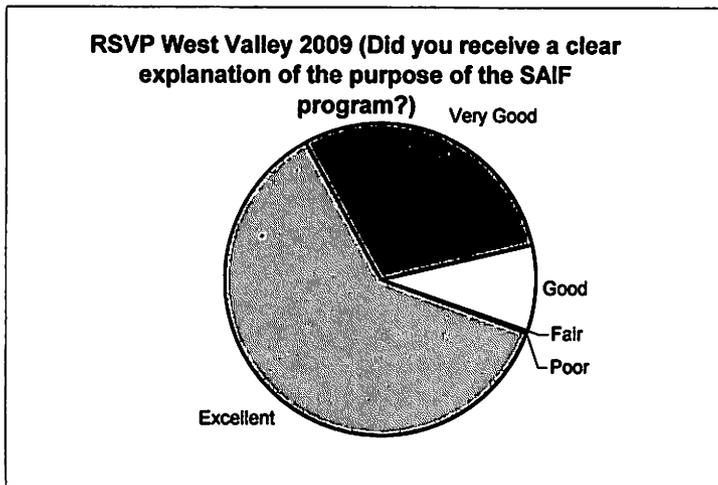
San Diego RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating	152	75	20	1	0
Rating on Information provided	157	74	15	2	0

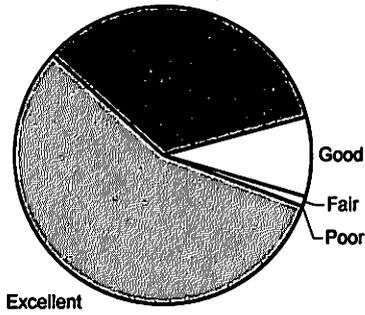
Long Beach RSVP

	Excellent	Very Good	Good	Fair	Poor
Clarity rating					
Rating on Information provided					

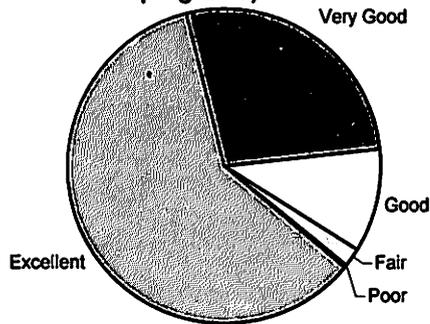
2009 Graphs



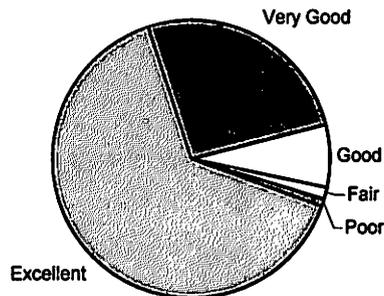
Golden Umbrella 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



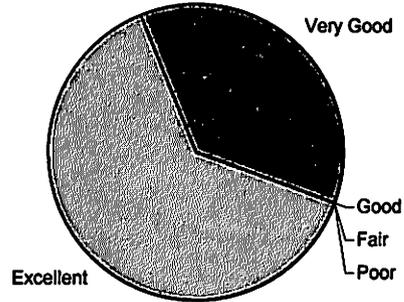
Kings/Tulare RSVP 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



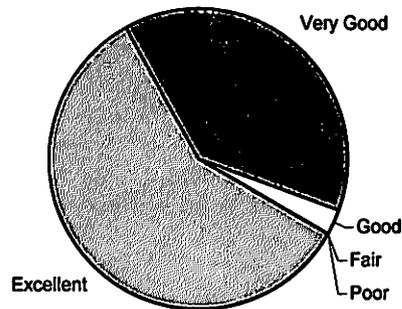
Kings/Tulare RSVP 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



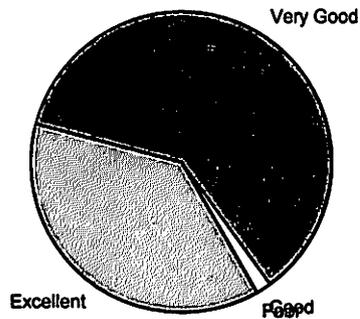
San Francisco/Alameda RSVP 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



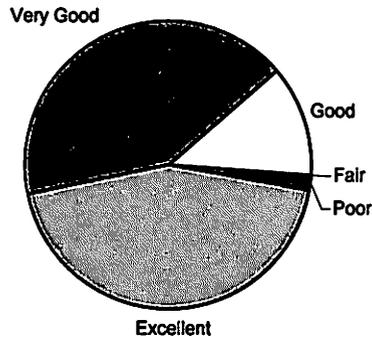
San Francisco/Alameda RSVP 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



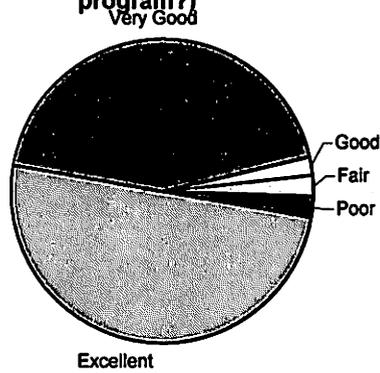
San Joaquin RSVP (HSA) 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



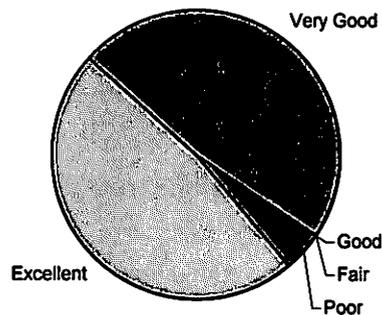
San Joaquin RSVP (HSA) 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



Council on Aging - OC 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



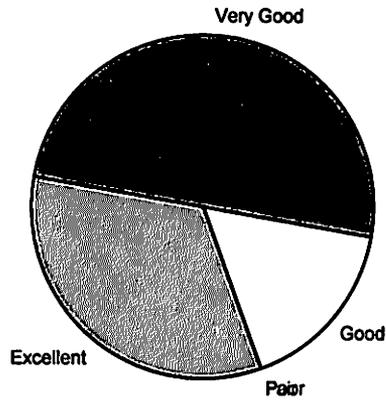
Council on Aging - OC 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



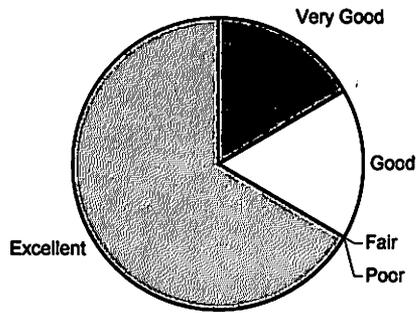
Oxnard RSVP 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



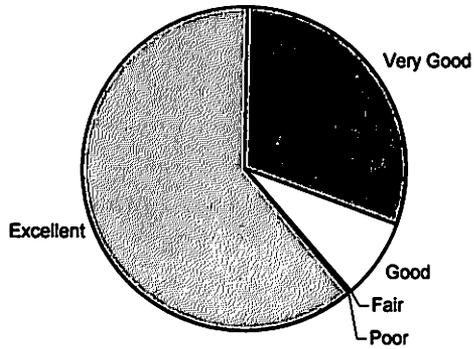
Oxnard RSVP 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



Oxnard RSVP 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)



San Diego RSVP 2009 (Did you receive a clear explanation of the purpose of the SAIF program?)



San Diego RSVP 2009 (Has today's presentation provided adequate information to help you avoid being a victim of fraud?)

