The Financing Choices of American Consumers: 
The Influence of Quantitative Literacy 
& Material Values

Cinnamon Hillyard
chillyard@uwb.edu
(425) 352-3169

Pete Nye
pnye@uwb.edu
(425) 352-5383

University of Washington Bothell
ABSTRACT

Some consumers finance discretionary spending at extremely high interest rates. Many carry substantial balances on their credit cards at effective annual interest rates as high as 36 percent, and some pay annual rates on “pay day” loans in excess of 400 percent. High interest debt can rapidly cascade into an overwhelming financial burden, threatening the consumer’s credit and long-term financial health. While these choices may seem unwise or even irrational, they are widespread.

This survey study investigates how quantitative literacy may promote wiser financial choices. In addition, we examine consumers’ willingness to apply their quantitative skills and think through the implications of their financing choices. While quantitative literacy and consumer education matter, we propose that consumer values and motivations may be at least as important in explaining risky financial choices. In particular, materialism may drive many American consumers to take on imprudent levels of high interest debt. Understanding consumer financing choices may require a better understanding of the consumption behavior that motivates those choices.
Risky Financial Choices ....

National statistics ....

– 1.4 million bankruptcies filed in 2009

– American’s “revolving credit” debt (mostly credit cards) totaled $795.5 billion in January 2010
Research Questions

Why do some consumers engage in this risky behavior?

– Does quantitative literacy promote wiser financial choices?

– How do other personal values and dispositions drive financial choice?
The Proposed Model

Individual Differences

Materialism

Compulsive Consumption

Risky Financial Behavior

Numeracy

Personal Financial Wellness

Behaviors

Affect
QL and Decision Making

Lipkus and Peters
“Understanding the Role of Numeracy in Health”
*Health, Education, and Behavior* (2009)

Gilliland, Melfi, Sikorskii, Corcoran, and Melfi.
“Quantitative Literacy at Michigan State University, 2: Connection to Financial Literacy”
*Numeracy*, (2011)
QL and Decision Making

Numeracy ...

– facilitates computation
– encourages more information seeking and greater depth of processing
– improves interpretation of the meaning of provided numbers
– promotes behavioral change
Explanatory Variables

**Subjective Numeracy Scale** (Fagerlin, et. al. 2007)

- beliefs about your quantitative skills
- preferences to use numerical information

**Financial Quantitative Literacy** (Nye and Hillyard)

- 13 multiple choice financial math questions including topics such as budgeting, time value of money, reading graphs, and calculating tips
Mean = 61%
Std Dev = 25%
‘Material Values

Materialism

“The importance ascribed to the ownership and acquisition of material goods in achieving major life goals or desired states.”
(Richins 2004)

“The importance a consumer attaches to worldly possessions.”
(Belk 1984)

Materialism is an important value that drives behavior and life decisions. Materialists organize their lives around acquiring possessions.
(Richins & Dawson 1992)
Material Values

Compulsive Consumption

Abnormal consumer behavior characterized by chronic buying episodes that the consumer feels unable to stop. Examples:

- buying to feel better
- buying items you can’t afford
- buying only because an item is on sale

While providing short-term satisfaction, compulsive consumption can generate negative long-term consequences.

(Faber & O’Guinn 1988, 1989)

Instrumental vs. Compulsive Materialism
Explanatory Variables

Material Values Scale (Richins 2004)

- 15 statements (7 point Likert scales)
- High internal consistency (Cronbach $\alpha = .79$ to $.91$)
- Three correlated dimensions: Success, Centrality, Happiness

Compulsive Consumption Scale (Faber & O’Guinn 1989)

- 14 statements (5-point Likert scales)
- High internal consistency (Cronbach $\alpha = .83$)
Outcome Variables

Individual Differences

Materialism

Behaviors

Compulsive Consumption

Risky Financial Behavior

Affect

Personal Financial Wellness

Numeracy

Financial Quantitative Literacy

Subjective Numeracy
Risky Financial Behavior: Factor Structure

Behavioral Statements 1
(16 items)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Consumer Borrowing</th>
<th>Saving / Budgeting</th>
<th>Investing / Retire Plan</th>
<th>Credit Card Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>miss car payments</td>
<td>.818</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pawn a valuable possession</td>
<td>.816</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>take out &quot;pay day&quot; loans</td>
<td>.768</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pay my bills on time</td>
<td>-.668</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>borrow to pay monthly expenses</td>
<td>.619</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>take cash advance on credit card</td>
<td>.525</td>
<td>.402</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bills &gt; monthly income</td>
<td>.451</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>overdraft my checking account</td>
<td>.405</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>follow monthly budget</td>
<td></td>
<td>.851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>save for unexpected expenses</td>
<td></td>
<td></td>
<td>.792</td>
<td></td>
</tr>
<tr>
<td>save for important purchases</td>
<td></td>
<td></td>
<td>.682</td>
<td></td>
</tr>
<tr>
<td>invest in stocks or funds</td>
<td></td>
<td></td>
<td></td>
<td>.858</td>
</tr>
<tr>
<td>contribute to retirement plan</td>
<td></td>
<td></td>
<td></td>
<td>.831</td>
</tr>
<tr>
<td>finance on credit card</td>
<td></td>
<td></td>
<td></td>
<td>.839</td>
</tr>
<tr>
<td>use more than three credit cards</td>
<td></td>
<td></td>
<td></td>
<td>.695</td>
</tr>
<tr>
<td>borrow &gt; $100 from friend</td>
<td></td>
<td></td>
<td></td>
<td>.415</td>
</tr>
</tbody>
</table>

1. Question: "Please indicate how often you engage in the following behaviors."
   (1= never, 5 = frequently)
Financial Distress / Financial Well-Being Scale

(Thomas Garman, 2004. *InCharge Education Foundation*)

- Eight statements scored on a ten-point scale.
  “How do you feel about your current financial condition?”
  
  1 = Feel Overwhelmed  
  10 = Feel Comfortable

- Interpretation

  1. 0  
  Overwhelming financial distress

  5. 0  
  Average financial distress

  10. 0  
  No financial distress /
  Highest financial well-being

- Cronbach’s alpha = .956
Our Survey ...

• We developed a survey instrument to be as comprehensive as possible. It was 18 pages, including items on ...
  – Financial Behaviors and Decisions
  – Subjective and Objective Numeracy
  – Personal values (e.g. materialism, compulsiveness, etc.)
  – Demographics

• 305 subjects took the survey. Each received $20 for their time and thoughtful response.

• We used multiple public locations throughout Northern Puget Sound to solicit subjects.
<table>
<thead>
<tr>
<th>The Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Std Dev</td>
</tr>
<tr>
<td>&lt; 25 yrs</td>
</tr>
<tr>
<td>25 to 34</td>
</tr>
<tr>
<td>35 to 50</td>
</tr>
<tr>
<td>&gt; 50 yrs</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>High School grad</td>
</tr>
<tr>
<td>College grad</td>
</tr>
</tbody>
</table>
PRELIMINARY RESULTS
Estimated Model
(Ages 18 – 67)

Materialism → Compulsive Consumption

Numeracy → Risky Financial Behavior

Financial Quantitative Literacy → Subjective Numeracy

R² = .51

Chi-squ = 8.05, df=6, p = .234
## Quantitative Literacy: Impact on Personal Financial Wellness

### Financial Quantitative Literacy

<table>
<thead>
<tr>
<th></th>
<th>Low (1/3)</th>
<th>High (1/3)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Financial Wellness</td>
<td>4.3</td>
<td>6.4</td>
<td>**</td>
</tr>
<tr>
<td>Risky Financial Behavior</td>
<td>2.41</td>
<td>1.87</td>
<td>**</td>
</tr>
</tbody>
</table>

### BEHAVIORS

<table>
<thead>
<tr>
<th>Behavior</th>
<th>% Low (1/3)</th>
<th>% High (1/3)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>home mortgage</td>
<td>16</td>
<td>36</td>
<td>*</td>
</tr>
<tr>
<td>overdraft checking</td>
<td>37</td>
<td>14</td>
<td>**</td>
</tr>
<tr>
<td>cash advance on card</td>
<td>19</td>
<td>7</td>
<td>.02</td>
</tr>
<tr>
<td>pay day loan</td>
<td>11</td>
<td>1</td>
<td>*</td>
</tr>
</tbody>
</table>

* Differ significantly from previous group at p = .01
** Differ significantly from previous group at p = .001
Personal Financial Wellness = f (Materialism)

Low Stress

Personal Financial Wellness

High Stress

Materialism

Risky Financial Behavior

SCORE (1 to 10)

SCORE (1 to 5)

p = .000

p = .000
Future Research

• Interactive effect of QL and Materialism on Personal Financial Well-being.
  
  Do instrumental materialists benefit more than compulsive materialists from greater QL?

• Gender differences.
  
  Are females more systematic than males in their financial decision making? Do females experience less financial distress?

• Financial Numeracy among older adults.

• Risky Financial Behavior: the Life Cycle Hypothesis.
  
  Does financial stress peak during the child-rearing stage of the family life cycle?