

Orientation Toward Finances: Development of a Measurement Scale

Ellen Loix, Roland Pepermans, Cindy Mentens,
Maarten Goedee, and Marc Jegers

The construct of orientation toward finances has been developed to focus on individual behavioral dispositions related to personal financial management activities. Based on input from different literature sources, we sought to operationalize the construct using items referring to behavioral competencies. This measurement scale has further been tested and analyzed, resulting in two subfactors: Financial Information, and Personal Financial Planning. We obtained acceptable reliability and validity results for both factors through various studies. Cross-validity testing and confirmatory analysis further supported the robustness of the final two-factor measurement scale.

Individual Orientation Toward Finances: The Construct

What makes certain people good managers of their personal finances? What makes some people more able than others to effectively budget their expenses and allocate their monthly income? These questions focus on individual financial *management* behavior, i.e., how individuals deal with their financial means. It is a topic with important implications that seems rather neglected in the vast body of financial and economic behavioral studies.

This paper introduces a measurement scale and a construct of *orientation toward finances* that is related to, yet different from, a number of other attempts to investigate financial behavior. We define the construct as *an individual behavioral disposition characterized by personal interests and skills related to managing one's own finances effectively*. We will elaborate on the conceptual relationships and differences with other finance-related topics.

Ellen Loix is a research assistant in the Centre for Work, Organizational and Economic Psychology at Vrije Universiteit Brussel.

Roland Pepermans is head of the Centre for Work, Organizational and Economic Psychology at Vrije Universiteit Brussel.

Cindy Mentens was a research associate in the Centre for Work, Organizational and Economic Psychology at Vrije Universiteit Brussel.

Maarten Goedee was a research associate in the Centre for Micro-economics for Profit and Non Profit Sectors at Vrije Universiteit Brussel.

Marc Jegers is head of the Centre for Micro-economics for Profit and Non Profit Sectors at Vrije Universiteit Brussel.

Requests for reprints should be sent to: Roland Pepermans, Work, Organizational and Economic Psychology (WOEPs), Vrije Universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium. Email: roland.pepermans@vub.ac.be

Non-Specific Financial Behavior

First, in the literature on individual economic behavior, there has been much concern about specific financial behaviors, such as saving (Wärneryd [1999]) and taxation (Andreoni, Erard, and Feinstein [1998]), or specific financial situations like gambling (Walker [1995]), amassing debt (Lea, Webley, and Walker [1995]), investment behavior (Lewis and Mackenzie [2000]), or poverty (Finn, Zorita, and Coulton [1993]). Specific financial issues or situations, however, will not be the aim of the orientation toward finances construct; we are concerned with *non-specific* financial behavior here. But being interested in finances or having certain habits related to managing one's financial means may indeed be a moderating factor, with either positive or negative effects in the aforementioned situations.

Individual Financial Behavior of the General Public

As far back as the 1980s, Furnham [1984] mentioned the lack of research about practical financial behavior. Since then, the situation has changed somewhat, although researchers continue to concentrate mainly on the financial behavior of specific groups like stock market investors (Wärneryd [2001]) and households (Gunnarsson and Wahlund [1997]). This paper will focus on the general public, i.e., on ordinary people where there exists some speculation as to their money-related behavior (Furnham [1996]). How do they handle their own income and their financial situations in general, and what are important elements of that behavior? Hence, the *orientation toward finances* (or, toward financial management) refers to everyday

financial matters. We expect this construct ultimately to help explain general individual financial behavior like risk-taking and individual investments.

Our approach is somewhat related to the money handling inventory of Fank [1994]. But his scale is not quite behavior-oriented, as it includes a variety of attitudinal factors. We expect that our new attempt to come up with a founded scale to measure human behavior when dealing with money will differentiate between individuals, as well as position them on a reliable and valid scale.

We hypothesize that having a strong financial orientation will cause individuals to focus strongly on their personal financial situation, motivate them to actively look for financial information, and cause them to plan and budget their money thoroughly. But it may also predispose them to look for certain investments, or to use specific financial management tools, part of which is in line with what Tigges, Riegert, and Jonitz [2000, p. 129] note:

People especially interested in economic and financial matters, either for private or professional reasons...collect economic information more extensively than the general population, for example, by reading business magazines.

Financial behavior in households can be considered a related topic (Meier, Kirchler, and Hubert [1999]). There, we can distinguish among levels: strategic (long-term financial decisions), administrative (budgeting and bookkeeping), and operational (shopping and payments) (see Antonides and Van Raaij [1998]). Indeed, this research area may help to further operationalize our study.

Household-related financial management is in turn somewhat "similar to [financial management in] a business in the sense that estimates and budgets may be made and bookkeeping may be done," (Antonides and Van Raaij [1998, p. 437]). Consequently, additional input to define and create this construct may also be found in business-oriented financial management literature (e.g., Brealey and Myers [1991], Spencer and Pruss [1997]), although many financial activities in that area do not easily transfer to an individual level.

A Behavioral Disposition for (Effectively) Handling One's Finances

We refer to elements of individual financial management behavior, e.g., interests and skills, as competencies. Competencies are underlying individual characteristics that result in effective or successful performance (Boyatzis [1982], Spencer and Spencer [1993]). Competencies are often seen as observable personal characteristics, and are influenced by atti-

tudes, motivations, and personal characteristics (Van Beirendonck [2000]). Hence, the orientation toward finances construct will be different from money attitudes and money beliefs for which extensive research already exists (Medina, Saegert, and Gresham [1996]).

Most studies on money attitudes bring their own measurement instrument, which mainly covers the affective attitudinal component, e.g., the Money Attitude Scale of Yamauchi and Templer [1982], or the money scale of Lim and Teo [1997] and Lim, Teo, and Loo [2003]. Some studies cover the cognitive and affective attitudinal components, e.g., the Money Importance Scale of Mitchell et al. [1998], or they may include the cognitive and conative components, such as the Money Beliefs and Behaviour Scale of Furnham [1984]. However, we believe the Money Ethic Scale of Tang [1992, 1993, 1995] is the only one that tries to include all three (Eagly and Chaiken [1993]).

The individual *orientation toward finances* will also focus on competencies where we emphasize actual self-reported behavior. Money attitude studies concentrate mainly on money in general as an abstract concept (either through attitudes/beliefs or behavior), and not on individuals' ways of dealing with their own financial situations. Of course, having a positive money attitude may be part of having a stronger orientation toward finances and more effective competencies, because it may lead one to more actively focus on personal financial management.

As a further emphasis on individual financial competencies, we must mention briefly the vocational interest literature. This literature certainly stresses individual interests (and skills) in various professional areas, such as the financial arena (e.g., Savickas and Spokane [1999]). However, this research is mainly directed at helping younger people choose a professional career. Consequently, it is less consistent with—although not irrelevant to—our views on the *orientation toward finances* as an individual behavioral disposition.

Conclusion

In conclusion, we present the individual *orientation toward finances* construct as dealing with personal financial management behavior of a general and non-specific nature. We expect parallels to exist with corporate and household financial management behavior, because managing one's personal finances may require similar ways of forecasting, planning, and control. Note, however, that we have developed the construct merely as an individual behavioral disposition, not as an attitude.

Practical applications of an *orientation toward finances* would be counselling individuals in handling financial problems, or even as a precondition for training in financial management. As a result, applying the

construct to career management and areas related to personal development seems self-evident. We also hope the concept will help explain individual financial risk behavior and decision-making.

Conceiving an Item Pool

In order to conceive a valid and reliable measurement scale, we generated several defined construct items to build the *orientation toward finances* scale (hereinafter referred to as ORTOFIN). We focused on personal financial skills and interests and on individual financial habits and practices. As Vogt [1993, p. 45] notes,

A measure has content validity when its items accurately represent the thing (the “universe”) being measured. Content validity is not a statistical property; it is rather a matter of expert judgement.

We generated a questionnaire that included a broad range of individual financial management activities, which is considered the first indication of content validity (Murphy and Davidshofer [1994]). Generating items began with a literature study of the basic activity domains that are essential parts of sound corporate and household financial management. A number of domains are rather omnipresent in this literature: budgeting, planning, investment analysis and financing, financial control, cost analysis, purchasing, and debt management (see Brealey and Myers [1991], Spencer and Pruss [1997], Horngren, Foster, and Datar [1997], Antonides and Van Raaij [1998], Furnham and Argyle [1998], Gunnarsson and Wahlund [1997]). Three independent experts in the field of personal and corporate financial management and two of our authors each generated fifteen Likert-type items to represent these topics, translated to an individual financial management level. This resulted in an initial pool of seventy-five items to represent the content domain.

We continued item generation by using the Campbell Interest and Skill Survey (CISS) (Campbell, Hyne, and Nilsen [1992]). We included items from two relevant sections related to individual financial management:

- Financial Services Basic Skills Scale (five items).
- Financial Services Basic Interests Scale (twelve items).

This new pool of ninety-two items was then evaluated by the remaining three authors who were not involved in the item generation. Their first objective was to detect overlap in content and achieve full consensus

about our representation. They recommended forty-one items be deleted.

Further refinement of the items then focused on shortness and simplicity of formulation, ambiguous wording and jargon, and any possible duplication of items. This eliminated twenty more items, leaving the first provisional version of the questionnaire with a total of thirty-one items. These steps were taken as per the recommendations of Bearden, Netemeyer, and Mobley [1993] to guarantee the content validity of a measurement scale.

Study 1: Test-Retest Reliability

The reliability of a measure is a precondition for its validity, so we needed to investigate the test-retest reliability of ORTOFIN items. The set of thirty-one items was administered to seventy-eight respondents with a two-week time interval. This first sample consisted of MBA students ($N = 49$, average age = twenty-eight years), and psychology students ($N = 28$, average age = thirty years). In the full sample, no item had a non-significant test-retest correlation ($r_{\min} = 0.26$ and $r_{\max} = 0.85$, all $p < 0.05$, $r_{\text{avg}} = 0.59$).

We hypothesized that an orientation toward finances would be stronger in the MBA group than in the psychology group (given their higher financial skill level, if only through extensive courses). So we considered the test-retest results separately for both groups as well. Indeed, less theoretical experience with finances made for more fluctuation in answers, and thus less reliability. In the psychology group, five items had non-significant test-retest correlations ($p > 0.05$), while in the MBA group only one did. This confirmed our hypothesis. However, since items on this scale were not supposed to be dependent on theoretical financial skills, but on practical, real-life ones, we deleted those six items. Twenty-five items were left.

Study 2: Analysis of Response Patterns

Since the orientation toward finances has been conceived as an individual characteristic, the items are expected to be able to differentiate between individuals. The remaining items in the questionnaire were therefore tested for their differentiating power among respondents. If items did not elicit a variety in response patterns, we expected that they would not be able to differentiate between individual characteristics.

To test this, we created a new sample of MBA and psychology students ($N = 86$ and $N = 74$, respectively). It was decided that if 80% or more of the respondents scored an item on one or two adjacent response categories, we would consider that a non-differentiating re-

sponse pattern for that item. Using this criterion, two items were dropped, leaving twenty-three items.

Study 3: Analyses of Construct Validity

Known Group Validity

We administered ORTOFIN with the remaining twenty-three items to two groups of respondents. The sample was the same as for the previous analysis of response patterns, MBA students ($N = 86$), and psychology students ($N = 74$). The issue at stake here was a test of *known group validity*, or criterion keying (Murphy and Davidshofer [1994]). This approach uses well-defined criterion groups who are then administered the questionnaire items.

We performed t-tests on the average responses for each item, with the hypothesis again that the answers from the MBA group would indicate a significantly stronger financial orientation than the psychology group (one-tailed, $p < 0.05$). This hypothesis was confirmed for all except four items. We deleted those four from the questionnaire, thus building in a further guarantee of construct validity.

Groups with Diverse Financial Experience

Another test of the questionnaire's construct validity was performed using a sample of non-student respondents with a variety of financial experience. The remaining nineteen items were administered to a sample of 213 employees from a large non-profit organization. The respondents were 38% female and 62% male, with an average age of 38.8 years. The majority had a university education and an average monthly net income of €1,746. We also asked the respondents to indicate their level of professional financial expertise through two questions (to be answered on a five-point scale):

- To what extent do you have a profession or job today in which financial responsibilities make up your major accountabilities?
- To what extent would you like to perform in a profession or job in which financial responsibilities would make up your major accountabilities?

The aim of this substudy was to determine which items correlated significantly with financial expertise, since we expected more financial experience to relate to a higher financial orientation.

The correlation coefficient between both questions was highly significant ($r = 0.517$, $p < 0.01$; standardized item $\alpha = 0.682$), so we combined responses to

both questions into a single average score: the subjective *financial experience index* (FEI). All but five items showed a statistically significant correlation with FEI ($p < 0.05$). These five items were deleted, leaving fourteen items in the questionnaire.

Scale Dimensionality and Reliability

Using exploratory factor analysis (principal axis factoring), we looked for a simple structure of the remaining items using the data from the previous sample ($N = 213$). After an oblique rotation allowing for correlated factors, a first analysis resulted in four factors with eigenvalues above 1.0 that explain 55.2% of the variance. However, a number of items did not uniquely load on one factor, and some resulted in low commonality. After inspection of the scree test and a number of deletions and additional analyses, we obtained an acceptable result: two factors with eigenvalues above 1.0, represented by eight items in total (explained variance: 57.4%). The correlation between the two factor-based scores reached 0.268 ($p < 0.001$). The factor results and the acceptable Cronbach's α 's are in Table 1.

The first factor, Financial Information, indicates that an important part of an orientation toward finances is an interest factor, e.g., actively looking for financial (and economic) knowledge. This is again very much in line with the earlier quote from Tigges, Riegert, and Jonitz [2000].

The second factor, Personal Financial Planning, emphasizes the logic of financial management as found in many financial management textbooks. This factor focuses on planning-related behavioral competencies.

Using average item scores for the indicated items, Table 2 shows the correlations between the two subscales, as well as their correlations with the total scale score (the unweighted average of the eight items) and with FEI. The correlation with Financial Information is clearly the highest. It is also acceptable to combine all the items into one cumulative scale as an indication of an overall orientation toward finances, since the standardized item Cronbach's α reaches 0.744.

Relationships with Reported Financial Behavior

To further validate ORTOFIN, respondents in the previous sample also answered a set of questions on a five-point scale relating to personal financial behavior:

1. How many debit cards do you have? (1 = none, 2 = one, 3 = two, 4 = three, 5 = more than three)
2. How often do you use debit cards to pay for goods and services? (1 = never, 2 = a few times per year, 3 = a few times per month, 4 = a few times per week, 5 = daily)

Table 1. ORTOFIN Structure after Principal Axis Factoring with Oblique Rotation ($N = 213$)

	Factor 1	Factor 2
<i>Financial Information</i>		
11. I never read the financial pages of my newspaper (<i>reverse coding</i>).	0.723	
3. I try to keep track of general economic trends.	0.703	
9. I am not attracted by the financial part of life (<i>reverse coding</i>).	0.679	
1. I regularly look for interesting investment opportunities for my money.	0.637	
12. I am interested in the evolution of currency rates.	0.524	
<i>Personal Financial Planning</i>		
10. I accurately plan my expenses.		0.737
13. I keep track of my personal expenses in a systematic way.		0.721
2. I like to plan things.		0.511
Eigenvalue	2.921	1.674
Variance explained (%)	36.51	20.92
Standardized item α	0.788	0.685
Average score (five-point scale)	2.92	3.46
Standard deviation	0.86	0.99

Note: Item numbers refer to their position in the fourteen-item questionnaire.

3. How many credit cards do you have? (1 = none, 2 = one, 3 = two, 4 = three, 5 = more than three)
4. How often do you use credit cards to pay for goods and services? (1 = never, 2 = a few times per year, 3 = a few times per month, 4 = a few times per week, 5 = daily)
5. To what extent do you know the balance in your deposit account today? (1 = not at all, 2 = vaguely, 3 = more or less, 4 = almost exactly, 5 = very exactly)
6. How many savings accounts do you have? (1 = none, 2 = one, 3 = two, 4 = three, 5 = more than three)
7. To what extent do you know the balance(s) in your savings account(s) today? (1 = not at all, 2 = vaguely, 3 = more or less, 4 = almost exactly, 5 = very exactly)
8. If you had the financial means, to what extent would you invest in vehicles other than savings accounts (e.g., shares, bonds, options, etc.)? (1 = not at all, 2 = a little, 3 = sometimes, 4 = predominantly, 5 = uniquely)

Given our construct definition, we hypothesized that the differences in *orientation toward finances* would

result in different actual financial behavior. Therefore, the behavioral measures have been correlated with the total ORTOFIN score and the two subscales. These results are shown in Table 3.

It is certainly promising for the scales' validity that all correlations between the behavioral measures and the total ORTOFIN scores are positive, and that the majority is quite significant. Indeed, a valid scale implies that high scores lead to higher frequencies on the financial behavior questions (one-tailed significance testing). The behavioral indicators that refer to more advanced financial management skills correlate most significantly.

In general, the total scale score correlates best with the behavioral measures. As Table 3 shows, a higher orientation toward Financial Information relates to a higher awareness of one's personal financial situation and to a broader view of savings opportunities, just as we expected. A higher orientation toward Personal Financial Planning also coincided with a better knowledge of one's personal financial situation.

It is interesting to note that the number of credit and debit cards does not correlate with any of the subscales. Although this is somewhat unexpected, we can attribute it to the increasing popularity of "plastic money"

Table 2. Correlations between ORTOFIN and Financial Experiences ($N = 213$)

	Financial Information	Personal Financial Planning	Financial Experience Index (FEI)
ORTOFIN (total)	0.840**	0.642**	0.445**
Financial Information		0.205*	0.466**
Personal Financial Planning			0.261*

** $p < 0.001$.

* $p < 0.01$.

Table 3. *Correlations Between ORTOFIN and Financial Behavior Indicators (N = 213)*

	ORTOFIN	Financial Information	Personal Financial Planning
Number of Debit Cards	0.098	0.070	0.081
Frequency of Using Debit Cards	0.108	0.113*	0.078
Number of Credit Cards	0.166**	0.108	0.078
Frequency of Using Credit Cards	0.152*	0.106	0.047
Knowing the Amount in Deposit Account	0.270***	0.173**	0.359***
Number of Savings Accounts	0.172**	0.204**	0.041
Knowing the Amount in Savings Accounts	0.281***	0.181**	0.346***
Other Investments Than Savings Accounts	0.288***	0.301***	0.161*

***p < 0.001 (one-tailed).

**p < 0.01 (one-tailed).

*p < 0.05 (one-tailed).

(especially debit cards, which already have a long history in Belgium). Credit and debit cards have become less of an idiosyncratic tool for personal financial management purposes.

Indications of Discriminant Validity

We investigated the correlations with a potentially related construct, money attitudes, to further validate the scale. A new (non-student) sample of 105 respondents was recruited using snowball sampling. The respondents were 40% female and 60% male, with an average age of 38.4 years. The majority had university degrees, and an average monthly net income of €1,730.

We could have hypothesized a positive correlation between money attitudes and ORTOFIN, since both are concerned with monetary means. But dealing with money is a more general behavior than just being interested and skilled in personal financial management. Therefore, we did not expect very high correlations.

This next step in the investigation was carried out using the money attitude scale of Lim and Teo [1997], which is a combination of three money attitude scales by Furnham [1984], Yamauchi and Templer [1982], and Tang [1992]. This original scale, with higher explained variance and greater parsimony than the other scales, has been used with thirty-four items representing eight factors (Lim and Teo [1997]). The factors as presented by the original authors were tested first for internal consistency in our sample (Cronbach's α):

1. Obsession: standardized item $\alpha = 0.750$.
2. Power: standardized item $\alpha = 0.687$.
3. Budget: standardized item $\alpha = 0.670$.
4. Achievement: standardized item $\alpha = 0.755$.
5. Evaluation: standardized item $\alpha = 0.432$.
6. Anxiety: standardized item $\alpha = 0.623$.
7. Retention: standardized item $\alpha = 0.567$.
8. Non-generous: standardized item $\alpha = 0.483$.

These results could be improved for some of the subscales by removing one item. This resulted in the following revised consistency measures:

2. Power: standardized item $\alpha = 0.721$.
3. Budget: standardized item $\alpha = 0.688$.
5. Evaluation: standardized item $\alpha = 0.654$.
6. Anxiety: standardized item $\alpha = 0.640$.

We were not able to obtain better α values for the retention- and non-generous scales, so we do not use them any further. Table 4 shows the correlations between the remaining money attitude scales and the ORTOFIN scales.

As we expected, money attitudes did have a positive relationship with orientation toward finances. Obsession with money has the highest correlation, while money as an indicator of one's achievements also relates quite highly to financial orientations. The subscales Financial Information and Personal Financial Planning correlate significantly with Obsession. This money attitude subscale mainly indicates preoccupation with money, which is certainly a logical precondition for financial interests. As such, this result points to the convergent validity of the ORTOFIN subscales.

We found another such indication in the Budget subscale. Indeed, saving and budgeting money would certainly be tied to financial planning. Moreover, the Budget scale appears to be the only one with a clear behavioral component, as it asks for a response about how respondents act, rather than for their opinions or beliefs. Another promising result lies in the significant correlation between the Achievement subscale of money attitudes and Financial Information. This correlation may indicate that a high level of financial information is required to achieve organizational success.

Somewhat unexpectedly, Anxiety correlated significantly with Personal Financial Planning. This subscale indicates defensiveness and feelings of anxiety about personal finances. A more positive orienta-

Table 4. *Correlations between ORTOFIN and Money Attitudes (N = 105)*

	ORTOFIN	Financial Information	Personal Financial Planning
Obsession	0.390***	0.329***	0.232**
Power	0.264**	0.220*	0.137
Budget	0.232*	0.108	0.378***
Achievement	0.286**	0.275**	0.104
Evaluation	0.054	-0.024	0.145
Anxiety	0.190*	0.053	0.238**

***p < 0.001 (one-tailed).

**p < 0.01 (one-tailed).

*p < 0.05 (one-tailed).

tion to financial planning may help reduce this money-related anxiety, however, since planning one's finances more carefully may help reduce anxiety and risk.

The Evaluation scale in money attitudes is not significantly related to ORTOFIN or to its subscales. This is not unexpected, since the former points to "money as a standard of evaluation or comparison with others" (Lim and Teo [1997, p. 377]), and ORTOFIN had no such intent for interpersonal connotations since it concentrates on the individual.

Demographic Characterization

We find further specification of an orientation toward finances in its relationship with some demographic variables, i.e., gender, age, education, and personal income. This characterization study used data from a previous sample (N = 213).

Female respondents had a significantly lower general orientation toward finances (mean score = 2.894) compared to males (mean score = 3.092) ($t_{210} = 2.019$, $p < 0.05$). This is in line with Prince's [1993] findings. The first subscale especially differentiated between male and female respondents, with males being oriented more toward financial information ($t_{190.8} = 3.599$, $p < 0.001$). However, contrary to Tang's [1992] results, we did not find that females had a greater ability for budgeting (assuming this is related to our second subscale). The correlations with the other demographic variables are shown in Table 5.

In line with our expectations, age does not differentiate among ORTOFIN scores. Income, however, is positively related to the total ORTOFIN score and to Financial Information. This is probably because, as people age, there is an increased need to be involved with their finances. Moreover, more highly educated people were more oriented toward finances and more inclined to look for financial information. This may be because they have gained the necessary skills to understand the often more complex material.

Study 4: Cross-Validation Using Alternative Questionnaire Administration

As a further step in its development, the scale was subjected to a cross-validation study using an internet version of the questionnaire. This online version was filled out by 1,007 respondents employed at one of two Belgian universities, or contacted among the customers of a major international consulting firm (46.8% female, 53.2% male; average age 29.9 years; average monthly personal net income €1,776; nearly fifty-fifty distribution between academic and non-academic education).

We performed a confirmatory factor analysis (CFA) on the covariance matrix of the data for the eight-item questionnaire, using the maximum likelihood method of estimation for correlated factors in the AMOS module of SPSS. Results are in Table 6.

Table 5. *Correlations between ORTOFIN and Demographic Characteristics (N = 213)*

	ORTOFIN	Financial Information	Personal Financial Planning
Age	0.045	0.035	0.069
Education	0.498***	0.352**	-0.115
Personal income	0.127*	0.123*	0.042

Note: Response alternatives on demographics have been combined to ensure frequencies do not go below 5%.

***p < 0.001 (one-tailed).

**p < 0.01 (one-tailed).

*p < 0.05 (one-tailed).

Table 6. ORTOFIN's Structure after Confirmatory Factor Analysis (CFA) ($N = 1007$)

	Factor 1	Factor 2
<i>Financial Information</i>		
6. I never read the financial pages of my newspaper (<i>reverse coding</i>).	0.692	
3. I try to keep track of general economic trends.	0.834	
4. I am not attracted by the financial part of life (<i>reverse coding</i>).	0.578	
1. I regularly look for interesting investment opportunities for my money.	0.605	
7. I am interested in the evolution of currency rates.	0.672	
<i>Personal Financial Planning</i>		
5. I accurately plan my expenses.		0.828
8. I keep track of my personal expenses in a systematic way.		0.667
2. I like to plan things.		0.545
Reliability (using CFA)	0.806	0.736
Average Summation Score (five-point scale)	2.99	3.44
Standard Deviation	1.01	0.92

Note: Item numbers refer to their position in the final eight-item questionnaire.

Following Hu and Bentler [1999], we first rely on the standardized root mean square residual (SRMR), which in our model is 0.071, supplemented by the root mean square error of approximation (RMSEA), which in our model is 0.076. Both indicate a very low badness of fit, approaching 0.00, therefore supporting the hypothesized model structure. Supplementing these absolute fit indices with incremental indices (Hair et al. [1998]), the comparative fit index (CFI) = 0.951 and the Tucker-Lewis index (TLI) = 0.928, both above the minimum 0.900 (Hair et al. [1998]). The parsimony of the overall model fit is further supported by the Jöreskog and Sörbom [1981] goodness-of-fit index (GFI) = 0.969, and its adjusted version (AGFI) = 942. These indices, together with the factor loadings in Table 6, support the convergent validity of the two factors.

The discriminant validity of the two subscales is supported by the relatively low correlation coefficient between both factors, i.e., 0.286 ($p < 0.001$) after correcting for measurement errors. As Bagozzi and Kimmel [1995] observe, the real correlation coefficient between both measures may be even lower. Both share a similar self-reporting procedure as items in a single questionnaire, which may inflate the correlation coefficient.

We also used CFA to further examine the reliability of the scale (Bagozzi and Kimmel [1995]). We computed construct reliability coefficients for the separate factors, which need to be above 0.70 (Hair et al. [1998]), based on the standardized loadings and on the measurement errors. The coefficients, which are both acceptable, are also in Table 6.

In this sample, the average summation score for the total scale is 3.22 (std = 0.80, $\alpha = 0.768$). For Financial Information and Personal Financial Planning, the standardized item α 's were 0.81 and 0.72, respectively.

Finally, although different samples are involved, the scale scores for the internet version of ORTOFIN are not statistically different from the scores on the earlier reported paper version ($p > 0.05$). Scores for the total scale and for the subscales did not differ substantially, which is in line the results of Mehta and Sivadas [1995].

Conclusion

This paper describes the development of a scale to measure an individual *orientation toward finances*. We developed this construct to respond to some practical and theoretical gaps in the area of the psychology of money usage. An *orientation toward finances* indicates the extent to which an individual reports being actively involved in the management of his/her finances. According to the operationalization presented here (the eight-item questionnaire), it covers an active interest in financial information and an urge to plan expenses, represented by two robust, valid, and reliable factors in a questionnaire: Financial Information and Personal Financial Planning. Similarities between two of the three factors mentioned for household financial behavior are clear (Antonides and Van Raaij [1998]).

A comparison of the high to low scores on ORTOFIN and the results from the previous scale development steps yield some insights. For example, a stronger orientation toward finances indicates more use of debit cards, a higher number of savings accounts, and a broader variety of investments. It also indicates more awareness of one's financial means, and more intimate knowledge of the details of one's savings and deposit accounts. High-scoring individuals on

ORTOFIN are also relatively more inclined to be obsessed by money, and to indicate their achievements and power in monetary terms, especially if they have a higher score on Financial Information.

The construct indicates a stronger or weaker tendency to focus on personal finances, and has added value on top of the age factor to explain the use of internet banking facilities. However, note that an *orientation toward finances* is only one element that may explain individual financial behavior. Other factors such as self-esteem, risk-taking, and achievement orientation may certainly have an influence (Livingstone and Lunt [1993]), and their relationship to ORTOFIN needs to be examined in future research.

The links between an *orientation toward finances* and consumer behavior, such as compulsive consumption and credit abuse, would also be an interesting research area following earlier work of Faber and O'Guinn [1988]. The relationships with various personality and value constructs is yet another area of investigation, as well as whether ORTOFIN has predictive power for a broader variety of specific financial behaviors.

Hence, our work on the validation of this scale is certainly not finished. But there exists ample evidence so far that a fruitful and promising construct has been developed, with significant links to personal financial behavior.

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