SORTED'S MONEY PERSONALITY QUIZ: REPORT

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Introduction

Financial capability is widely viewed as an enabler of financial wellbeing. However, there is growing acceptance that being financially knowledgeable[1] alone does not necessarily result in sound financial decision making or behaviours. Personality traits are also regarded as relevant to a person's financial life, for example, someone who is more inclined to pause and think through their options is less likely to make impulsive purchasing decisions. Having insight into one's 'money personality' is therefore useful for someone wishing to improve their money management, decision making and financial wellbeing.

The Money Personality Quiz on Sorted's sorted.org.nz site pairs user engagement with insight into financial decision making, to inform and direct users toward content relevant to their personal money management style and situation. As part of a wider redevelopment project, Sorted engaged our research team to help them redesign the Money Personality Quiz, with a focus on delivering meaningful results for users. Informed by existing research on personality traits and financial behaviours/outcomes, we designed a survey to identify New Zealanders' money personalities and their general characteristics. The key focus was on traits that give insight into financial behaviours, such as money management skills, spending and saving perceptions, and investing attitudes, with the analysis allowing us to identify those questions most informative for Sorted and their users.

To group New Zealanders based on their respective personality traits, we looked for patterns in the individual traits and behaviours. Using an analysis method known as latent class analysis, we identified five money personalities. Further, we were able to test the most relevant inputs (quiz questions) to inform the development of the quiz itself. The outcome is an insightful tool for New Zealanders to learn about how their personality traits may help or hinder their financial decision making and allow Sorted to provide bespoke content guidance for users.

This report is organised as follows:

- Executive Summary
- Background on the link between personality traits and financial behaviours
- Questionnaire design and sample
- Identifying money personalities: Tool development
- Money personalities overview: Key characteristics and attributes, with implications for Sorted
- Additional tables

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[1] *Knowing* what to do with your money *and doing it* are two separate things. Researchers now consider financial literacy (having financial knowledge) only one part of a bigger picture – financial capability is understood to be applying that knowledge.

Executive Summary

- A person's inherent personality traits, money values and attitudes are linked to their financial decision making. Having insight into their 'money personality' is useful for someone wishing to improve their money management and financial wellbeing.
- We identify 17 questions to include in the Sorted Money Personality Quiz, across a range of personality traits, money values and behaviours, with a focus on generating personalities that explain behaviours and decision-making. Questions included items measuring:
    - Confidence/self-perception on personal money handling
    - Risk preferences, specifically for investing
    - Psychological factors, relevant to money management (i.e., materialism, impulsivity, extraversion, present orientation, neuroticism, and money-based emotions)
    - Money values, for example, giving, money's relative importance, and status
    - Goal setting, as some personalities lend themselves to longer- versus shorter-term goals
- Based on our NZ-based survey, we find five money personalities: The Enterpriser, The Socialite, The Minimalist, The Contemporary, and The Realist.
- The Enterprisers (28.6% of our sample group) are very future-orientated, enjoy looking after their finances and are proud of being wise with their money (e.g., not spending or giving when they cannot afford to). Their top goal is maximising their savings and making a return on their investments.
- The Minimalists (33.7%) are conservative with risk, naturally frugal, and confident with their saving ability and money management. They tend to be saving for a shorter-term goal.
- The Socialites (19.5%) enjoy managing their money and taking financial risks, having nice things and sharing their wealth with others. These are our most outgoing group. Their goals trend toward shorter-term objectives, rather than the longer-term.
- The Contemporaries (10.4%) tend to identify themselves as spenders, engage in impulsive emotional spending, and are generous even when they cannot afford to be. This group do not enjoy managing money, preferring to 'live for today', but may be facing financial hardship – building financial resilience is their goal.
- The Realists (7.9%) are very conservative with risk and value money highly but are not confident with their money handling. The most introverted group, Realists monitor their finances but do not enjoy money management. Their goals tend to be shorter-term savings and building financial resilience.
- While the Money Personality Quiz itself does not ask demographic questions, we find some demographic differences between personalities, that may suggest personality is impacted by 'age and stage', and may change over a person's lifetime. For example, Socialites are on average younger than other personalities.
- The resulting Money Personality Quiz is outcomes-focused and designed with user experience in mind – we purposefully ask as few questions as possible, while maintaining appropriate levels of validity. The tool is not designed to replace more extensive personality testing in a research or clinical setting.
- These findings, when paired with financial capability research, may allow Sorted and policymakers to better support users to find information relevant to them and their financial wellbeing journey.

The link between personality traits and financial behaviours: Background

The impact of personality traits on financial behaviours, capability and wellbeing has been studied across a wide-ranging number of contexts, however, usually with the focus placed on how certain traits impact certain behaviours. For instance, Asebedo et al. (2019) consider personality traits on saving behaviours, finding extraverted and conscientious individuals tend to be more financially resilient and successful in their saving efforts. The relationship between trait and behaviour is not necessarily straightforward, however, with conflicting and contrasting findings throughout the finance literature employing the popular Big Five personality traits. For example, Fenton-O'Creevy and Furnham (2019) find a positive link between extraversion and impulse buying. They also associate neuroticism with impulse buying, while (unsurprisingly) conscientious individuals are less prone to spur-of-the-moment purchases. Personality and money attitudes have been linked to investment behaviour (see, e.g., Durand et al. 2008), debt (see, e.g., Robb and Sharpe 2009) and household finance (see, e.g., Brown and Taylor 2014). Donnelly, Iyer and Howell (2012) link materialism and future orientation to general money management, savings, debt and impulse buying.

Personality traits are critical for financial behaviours, capability, and wellbeing, but traditionally are treated as discrete variables rather than holistically. While the literature examining various traits with various outcomes is vast, studies determining how an individual's traits may interact to form their money personality are fewer and none, to the best of our knowledge, have been designed or tested for New Zealanders. Popular US-based money personality frameworks include Gurney (2009) and Mellan (1994), both finding nine personalities with differing money attitudes. Others have found less variation; Furnham (1984) identifies six dimensions linking money beliefs and behaviours in a British sample, and earlier work by Goldberg and Lewis (2000, originally published in 1978) identified three types of financial personality. More recent work, such as Németh and Zsoter's (2017) Hungarian-based study with seven distinct money personalities, is unlikely to be generalisable to Aotearoa New Zealand due to cultural differences in money attitudes and context.

A money personality survey for New Zealanders

Developing an end-user tool, the Sorted Money Personality Quiz, presents a unique opportunity to explore personality traits and how they might manifest in financial behaviour and decision making outside larger financial capability and wellbeing studies. This allows us to be both more holistic (measuring more traits) and targeted (linking traits to money handling) in designing the study. It is also important to have Aotearoa New Zealand-based research underpinning the money personalities, for two reasons. First, New Zealanders exhibit some differences compared to other populations regarding money attitudes and general financial confidence (Galicki 2021; Kempson and Evans 2021), and second, cultural norms have been found to be important for money management. This latter point is noted in the comprehensive New Zealand Financial Capability Survey 2021, as Aotearoa New Zealand is the only country of those using the Kempson (2009) financial capability framework to include generosity (giving) questions in its survey; we include these items here.

For risk attitudes – important for investment behaviour, see Keller and Siegrist (2006) for a useful survey of an extensive literature – we base our questions on Wärneryd (1996) and measure risk aversion, risk tolerance and additionally, loss aversion (Aren, Hamamci, and Özcan 2021) across eight statements. We also assess if respondents derive any pleasure or joy from managing their finances, again basing our measure on Aren et al.'s (2021) pleasure-seeking scale. While we do not explicitly measure all Big Five personality traits, we do capture extraversion and neuroticism using three statements each, taken from the British Household Panel Survey (see, e.g., Brown and Taylor 2014). As the Quiz takes an outcomes and behaviours focus, we also include a 'retail therapy' or emotional spending item, in addition to asking respondents to identify if they are more of a spender than a saver (Kempson 2009).

Another of the Big Five traits found to be relevant to financial behaviours and decision making is conscientiousness, which is strongly linked to money management skills (Donnelly, Iyer and Howell 2012). Money management is self-assessed based on nine items following Garðarsdóttir and Dittmar (2012); one of the nine items, *I am good at handling money*, we use as a measure of self-efficacy or confidence in one's money handling.

Three behavioural factors linked to spending, saving and debt use in the literature are also measured. The first is materialism, which is defined as the importance placed on ownership and acquisition of goods (Richins and Dawson, 1992). More materialistic consumers are expected to consume more, and therefore are more prone to overspending and debt use. We estimate a short form of the Material Values Scale developed by Richins and Dawson (1992), presented in Richins (2004), that uses six items. Our second behavioural factor is a measure of impulsiveness or lack of self-control. Impulsiveness has been linked to problematic spending behaviours, excess debt levels and an increased unwillingness to delay gratification (Vohs and Faber, 2007; Gathergood, 2012). We use Gathergood's (2012) impulsiveness measure, a single question asking people to rate their level of agreement with the following statement, *I am impulsive and tend to buy things even when I can't really afford them*. The final behavioural factor is present orientation, measuring the respondent's preference for present consumption. Those with a greater present orientation are more prone to spending and debt use. We use Kempson's (2009) statement, *I tend to live for today and let tomorrow take care of itself*.

Questionnaire design and sample

We put together a survey that included 54 questions in total, covering nine personality traits that have been shown in the academic literature to impact financial behaviours and decision making, demographics (age, gender, ethnicity, and region), and financial wellbeing. Four questions can be thought of as self-perception, money values or outcome-type statements, e.g., *If I'm sad/lonely/anxious/stressed, I buy things to make myself feel better*, or *I am a spender rather than a saver*, that are relevant to financial behaviour but are not necessarily inherent personality traits. Except for a small number of questions (five multiple choice questions, four demographic and four wellbeing items), for each question respondents were asked to rate their agreement with a statement based on a six-point Likert scale from strongly disagree to agree. We did not give respondents the option of selecting 'neutral', rather required them to agree or disagree with the item.

Te Ara Ahunga Ora commissioned Dynata Ltd to collect responses from 500 New Zealand adults over the age of 18. The sample broadly reflects Aotearoa New Zealand's population in terms of ethnicity, although the resulting sample contains an underrepresentation of NZ Europeans (64%, versus approx. 70% for the NZ population), had a slight over-representation of Māori (18.8% versus 16.5% for the NZ population) and over-sampled male respondents (59% versus 41% female). Culture can influence a person's money attitudes, while age may be relevant to how a person's traits translate into financial behaviours. For this project, we wanted to ensure our sample captured these differences, without needing to strictly obtain a nationally representative sample. After removing incomplete responses, the final number of respondents included in the sample was 484. We provide a discussion of demographic differences between the five money personalities we identify in the Money Personalities Overview section, although further research is needed to fully explore money personality differences between demographic groups.

Identifying money personalities: Tool development

While some personality traits can be measured using a single statement, e.g., for impulsivity we use *I am impulsive and tend to buy things even when I can't really afford them* (Gathergood, 2012) and for present orientation, *I tend to live for today and let tomorrow take care of itself* (Kempson, 2009), others are tested using multi-item instruments. For instance, the Materialism Value Scale is a six-item measure (we use a short

form; see, Richins, 2004). For measures with multiple questions, we averaged respondents' scores across the statements to create an index for a given trait. Table 5 (see Additional Tables) provides a list of the individual statements, for reference, along with the correlations of each item with its corresponding multi-item index. While we used a relatively extensive list of questions in the initial survey, including multiple items to identify particular traits, the Sorted tool needs to be shorter to maximise users' willingness to engage and complete the personality test. To reduce the number of questions, we used the correlations between the multiple items and the trait to select the most informative item for a given measure. As a result, we were able to generate a tool based on just 17 questions that has the ability to identify user money personalities.

To simplify the interpretation and comparison of group characteristics, before completing the final analysis we reduced the six-point scale to binary agree/disagree for all questions except *I monitor my financial statements* (we used a four-point scale) and *What's the next most important thing you'd like to do with your money?* (a multiple-choice item with four options). For the binary responses we classified anything that was 'strongly disagree', 'disagree', or 'slightly disagree' as *disagree*, and the same for *agree*. This gave easy-to-interpret outcomes and is also user-friendly in calculating scores for future respondents.[2]

It is worth noting that the resulting list of questions focuses on outcomes and behaviours, as the tool has a dual objective: firstly, it should provide insight for a user on the link between their personality traits and financial behaviours, and second, provide the user with a guide of their strengths and weaknesses when it comes to their financial decisions and money management. For instance, a person's level of enjoyment when making financial decisions or transactions is relevant to how they might choose to design their financial life. Additionally, having insight into whether one is an emotional or impulsive spender, or tends to give to others regardless of individual capacity or means, is important for setting oneself up for money management success. It is less useful in this context, however, to simply measure if one is generous or impulsive without that link to spending behaviour.

To identify the money personalities, we use Latent Class Analysis – a form of cluster analysis that allows us to consider a respondent's traits, behaviours, and attitudes together rather than separately. The method allows us to group respondents based on similar patterns in their responses, and thus identify unique groups or *money personalities*. For our Latent Class Analysis (LCA) we use MPlus 8, specialist software designed for cluster analysis of this sort. As LCA is driven by the findings of the data, especially in relation to the number of classes identified, the standard procedure is to test successively larger numbers of 'classes' (groups) until there is no improvement or a worsening in the so-called information criterion scores (here, AIC and BIC statistics), where lower scores mean a better model. In our case, this resulted in five classes as indicated in Table 1.

Number of Latent Classes	AIC	BIC
2	11,031.87	11,211.70
3	10,803.79	11,075.62
4	10,717.92	11,081.77
5	**10,686.87**	**11,072.72**
6	10,687.51	11,229.36

Table 1: Number of latent classes information criterion scores

Latent class analysis will identify the characteristics of each of the classes based on patterns in responses to each question. Interpretation and labelling each class, however, remains the domain of the researcher. We identified five money personalities that, in conjunction with the Sorted team, have been labelled as the

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[2] For brevity, we have omitted reporting results of testing various combinations of inputs and responses although these results are available on request from the authors.

Enterpriser, the Contemporary, the Socialite, the Minimalist, and the Realist.[3] Table 2 presents the probability that a respondent answered a question in a particular way, for each money personality. For example, 71.4% of respondents classified as Socialites were identified as agreeing with the materialism question, *I admire people who own expensive homes, cars and clothes*. It is worth noting that respondents are assigned probabilities that they sit within each class. Most respondents have one clearly dominant money personality, although in some cases they can have multiple with similar probabilities. We base our classification on the highest probability, acknowledging this will be an imperfect description for some people who bear hallmarks of more than one personality.

To classify future respondents, each Quiz response is modified to be a binary scale (for most questions) and the user is assigned a score representing the probability of that item for each money personality. We sum a user's scores across all 17 quiz questions and divide that by the maximum possible score for each personality (defined as the most common response for all questions). Each user then has five scaled scores, one for each money personality, and is assigned a money personality based on their highest score.

Money personalities overview

Figure 1 shows the survey sample proportions (*N* = 484) of each money personality, with the key characteristics and attributes of each described in more detail below. While the 'strongest' money personality type from a money management perspective is 'The Enterpriser', each trait we measure can lead to positive or negative money behaviours, and each personality type has relative strengths and potential weaknesses. For example, 'The Minimalist' displays strong savings behaviours but may not be taking sufficient financial risks to maximise their investment returns, while 'The Socialite' is a natural risk-taker. 'The Contemporary' and 'The Realist' tend to not enjoy making money management decisions and have low confidence in their money handling, thus any intervention or suggestions for these users should be different from the more confident types. Depending on personal circumstances and socio-economic factors like disposable income, relationship status, education etc (which are beyond the scope of our study), weaknesses of a personality may be strengths and vice versa.
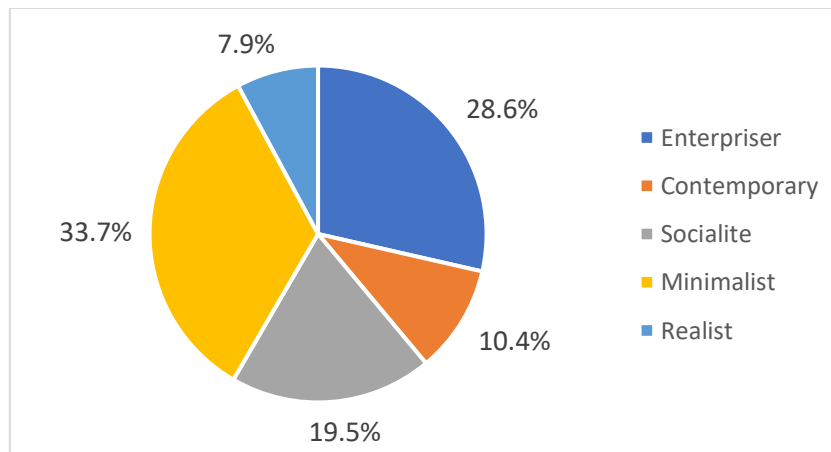

Figure 1: Money Personalities, N = 484

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[3] Thank you to Sorted's creative team for naming the money personalities.

Table 2: Probability of response by personality (class)

	Socialite	Contemporary	Minimalist	Realist	Enterpriser
I admire people who own expensive homes, cars and clothes					
Disagree	28.6%	61.7%	86.4%	55.7%	56.2%
Agree	71.4%	38.3%	13.6%	44.3%	43.8%
I am impulsive and tend to buy things even when I can't really afford them					
Disagree	56.6%	26.7%	96.3%	86.1%	97.5%
Agree	43.4%	73.3%	3.7%	13.9%	2.5%
I tend to live for today and let tomorrow take care of itself					
Disagree	40.0%	19.8%	74.7%	83.4%	100.0%
Agree	60.0%	80.2%	25.3%	16.6%	0.0%
I am a spender rather than a saver					
Disagree	43.3%	11.9%	80.0%	52.0%	95.9%
Agree	56.7%	88.1%	20.0%	48.0%	4.1%
I am willing to take financial risks in order to substantially increase my assets					
Disagree	29.8%	74.2%	94.3%	90.8%	44.7%
Agree	70.2%	25.8%	5.7%	9.2%	55.3%
I am prepared to take the risk of losing money, when there is also a chance to gain money					
Disagree	14.4%	69.9%	87.4%	100.0%	40.3%
Agree	85.6%	30.1%	12.6%	0.0%	59.7%
For me, the pain of losing is more than the pleasure of winning					
Disagree	34.9%	35.9%	26.2%	28.1%	37.2%
Agree	65.1%	64.1%	73.8%	71.9%	62.8%
I give money to others when I can't afford to					
Disagree	45.5%	36.6%	59.0%	88.6%	90.9%
Agree	54.5%	63.4%	41.0%	11.4%	9.1%
Money isn't my priority					
Disagree	40.6%	41.0%	20.1%	100.0%	63.7%
Agree	59.4%	59.0%	79.9%	0.0%	36.3%
Money is a symbol of success					
Disagree	21.8%	45.2%	67.2%	35.8%	34.1%
Agree	78.2%	54.8%	32.8%	64.2%	65.9%
I see myself as someone who is outgoing, sociable					
Disagree	30.0%	63.5%	58.1%	78.7%	53.4%
Agree	70.0%	36.5%	41.9%	21.3%	46.6%
I am good at handling money					
Disagree	31.7%	84.4%	12.8%	47.0%	1.7%
Agree	68.3%	15.6%	87.2%	53.0%	98.3%
I monitor my financial statements					
Strongly disagree	1.5%	26.2%	0.0%	9.0%	0.0%
Disagree	14.6%	15.4%	2.7%	10.9%	1.4%
Agree	36.0%	24.5%	28.7%	63.9%	7.8%
Strongly agree	47.9%	33.9%	68.6%	16.2%	90.7%
I see myself as someone who gets nervous easily					
Disagree	38.7%	27.2%	60.9%	42.1%	69.6%
Agree	61.3%	72.8%	39.1%	57.9%	30.4%
If I'm sad / lonely / anxious / stressed, I buy things to make myself feel better					
Disagree	41.5%	27.8%	88.4%	72.9%	92.6%
Agree	58.5%	72.2%	11.6%	27.1%	7.4%
I enjoy making investment decisions / transactions					
Disagree	15.9%	81.1%	55.3%	100.0%	9.1%
Agree	84.1%	18.9%	44.7%	0.0%	90.9%
What's the next most important thing you'd like to do with your money?					
Pay down debt	27.8%	46.9%	26.6%	42.0%	26.1%
Emergency Savings	27.4%	33.4%	26.4%	30.3%	10.8%
Short term goal	25.2%	4.6%	33.5%	21.4%	14.6%
Long term goal	19.6%	15.0%	13.5%	6.3%	48.5%

Key characteristics and attributes

The Enterpriser

Long-term planners who are wise with their money (i.e., do not spend or give when they cannot afford to), an Enterpriser enjoys taking an active approach to their financial life and is confident doing so. Their strength is their financial knowledge, happy to take financial risks to ensure their money is working for them and are savvy about investing. They are least likely of the personality types to make impulsive or emotional purchases, although their aspirational approach to money, seeing it as both a symbol of success and a priority, may pair unfavourably with materialism for some Enterprisers.

The Enterpriser is likely to want to maximise their savings and return on their investments, suggesting that they would use the Sorted website to upskill their investing know-how or plan for the future.

The Socialite

Joyful risk-takers, a Socialite enjoys managing their finances and considers money a symbol of success without prioritising it. Outgoing and confident with their money handling, these generous extraverts are more likely to be materialistic than other types and tend to live for today, rather than plan for tomorrow. Their high tolerance for risk, paired with low relative loss aversion, suggests some Socialites may take on unwise levels of risk, and those in this group who are also impulsive and/or prone to emotional purchases, may find themselves overspending or vulnerable to over-extending themselves with consumer debt.

The Socialite may like to explore active investment strategies and riskier investment classes, however, taking calculated risks and building financial resilience is an important focus for this personality type.

The Contemporary

Generous to a fault, the Contemporary is not confident in their money management and does not enjoy making financial decisions. Less materialistic than others, but more likely to see themselves as a spender rather than a saver, a Contemporary is living for today and may be prone to impulsive and emotional purchases. Increasing financial resilience by paying down debt and building an emergency savings fund is a key priority for the Contemporary, enabling them to share their wealth with others without impacting their own financial wellbeing. Working on their money mindset and general financial knowledge may allow this personality type to build their confidence, and savings, then take a passive or 'set and forget' approach to their financial life.

The Minimalist

Conservative with financial risks, frugal and confident, a Minimalist knows saving is their superpower. Scoring low on materialism, not prone to impulse or emotional purchases, and the only class to not see money as a symbol of success this personality type value a simpler life while keeping an eye on their financial situation and the future. A potential weakness for a Minimalist is not making their money work as hard for them as it could, and they may benefit from learning about low-cost, passive investment strategies.

The Realist

Somewhat of an enigma, the Realist shares characteristics with each of the other personalities and tends to take them to an extreme: they are even more conservative with risk than The Minimalist; prioritise money to a higher degree than The Enterpriser, and share their appreciation of future planning; monitor their finances like The Socialite, but are the introvert to a Socialite's extravert; and, take even less joy in thinking about money than The Contemporary. A more aspirational Realist may be materialistic but is unlikely to make impulsive or emotional purchases a habit, suggesting building confidence and encouragement to take appropriate investment risks is important. Given that The Realist does not like making money decisions, automation of bill payments and savings may appeal to them.

Money Personalities and 'Non-Personality' Characteristics

Using the survey data (*N* = 484), we considered the 5 money personalities in terms of respondents' age, gender (binary), ethnicity, and (self-reported) financial knowledge and wellbeing. The survey is broadly representative of Aotearoa's population; however, some subsamples are small and should be read with caution. Table 3 provides the demographic characteristics of the sample. Overall, demographic characteristics align with prior expectations based on the academic literature, and Te Ara Ahunga Ora's work on New Zealanders' financial capability and money insights (see Galicki 2021 and Gamble 2022). For example, those in the Enterpriser group are more likely to be men (Figure 2) and Socialites are younger, on average (Figure 3).

Table 3: Sample demographics

Full Sample (N)	484	%
Gender		
Male	286	59.1%
Female	197	40.7%
Non-binary/Third gender	1	0.2%
Age		
18-24	26	5.4%
25-34	58	12.0%
35-44	80	16.5%
45-54	108	22.3%
55-65	94	19.4%
65+	110	22.7%
Did not disclose	8	1.7%
Ethnicity (could select as many as applicable)		
Māori	91	18.8%
NZ Euro	311	64.3%
Pasifika	34	7.0%
Asian	53	11.0%
Indian	25	5.2%

Gender (binary)

Interestingly, the Minimalists are gender-neutral (Figure 2). Women are less likely to be Enterprisers (22% vs 33% of men) and are more likely to be Realists (10% vs 7%), Contemporaries (13% vs 8%) or Socialites (a smaller comparative difference, 21% vs 18%). It is possible the effect here is driven in part by self-efficacy (confidence) in money handling, as this is a key difference between these personalities and has been documented elsewhere as a driver of women's lower financial wellbeing (Galicki 2021).
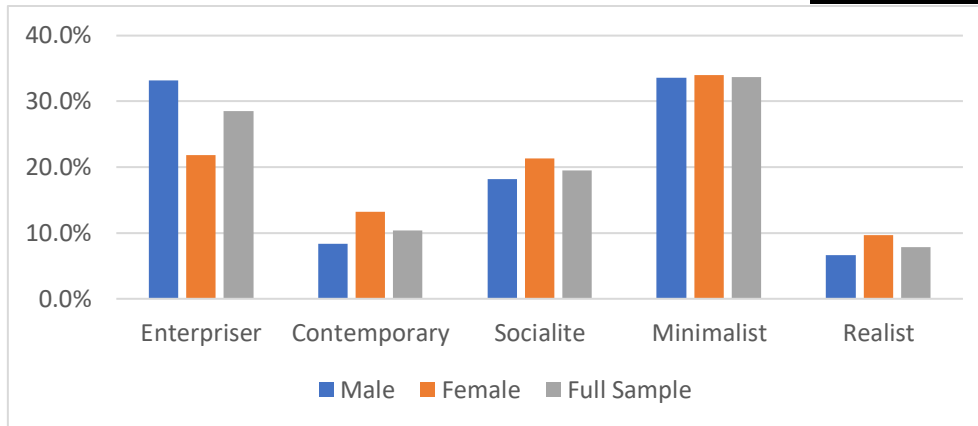
Figure 2: Money Personality by (binary) Gender

Age

Over half of the respondents aged 65+ years are Minimalists, with a further 27% being Enterprisers (Figure 3). Both money personalities tend to be older on average, while Socialites are younger. Given the focus on money behaviours in the quiz questions, the relevance of age and/or life stage is unsurprising, as traits such as risk aversion may be influenced by circumstances. For the youngest (18-24) and oldest (65+), lifestyle factors may dictate some financial behaviours and offset natural personality traits. Almost half of the respondents aged 25-34 years are Socialites, 1 in 5 are Enterprisers and 1 in 10 are Realists – they, along with all respondents under 45 years of age, are much less likely to be Minimalists. The Contemporary type appears age-neutral, with an almost fifty-fifty split between those aged 18-44 years and 45+, potentially indicating this money personality type may be more fixed over a person's lifetime than others.
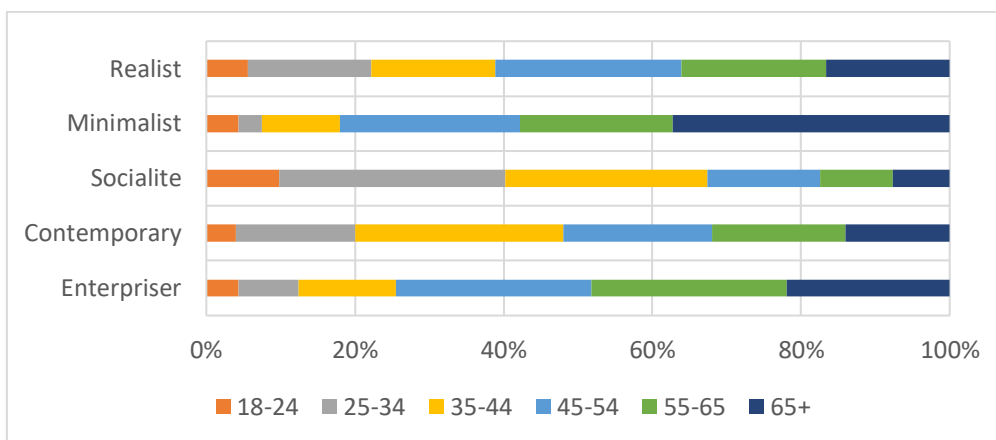

Figure 3: Money Personality by Age

Ethnicity

For simplicity, we include five ethnic groups here (Figure 4): Māori, NZ European, Pasifika, Asian, and Indian. Respondents were able to identify as more than one ethnicity and we have not applied prioritisation here, as ethnicity is not a focus of our analysis, money personality analysis, and cultural factors are not asked in the survey, or the resulting Money Personality Quiz. Samples for respondents identifying as Pasifika, Asian and Indian were low and findings for these groups should be treated with caution. Māori and Pasifika respondents were less likely to be Enterprisers and more likely to be Contemporaries or Socialites. One in three Māori respondents were Minimalists, in line with the sample average. Interestingly, almost 1 in 5 of those respondents identifying as Asian were Realists (19% vs 8% for the full sample), potentially highlighting a cultural element in money attitudes.
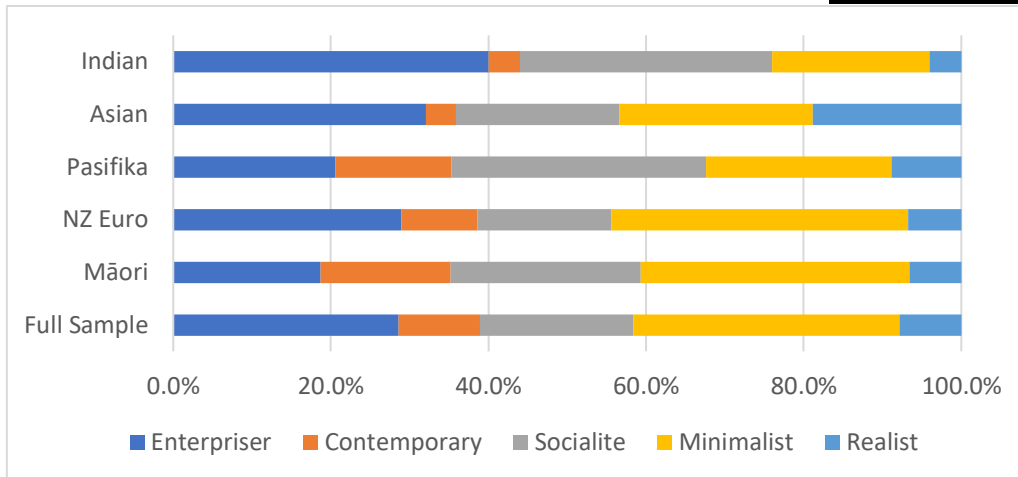
Figure 4: Ethnicity and Money Personality

Financial capability and wellbeing

Given the tool's focus on money personality rather than financial capability or wellbeing, we do not assess respondents' financial capability. However, we do ask respondents to self-assess their level of financial knowledge, whether their debt repayments are a heavy burden, if they could cope with an expected expense of $500 today, and how easily their income allows them to make ends meet. The first measures a component commonly included in financial capability frameworks referred to as *subjective financial literacy*. This can also be considered a measure of financial self-confidence. The latter three are measures of financial vulnerability, which in this case is self-assessed as opposed to using a more objective measure (such as those calculated from a respondent's actual financial circumstances). Average scores for the full sample and personalities are contained in Table 4.

We measure subjective financial knowledge using a seven-point Likert scale, from 'far below average' (score of 1) to 'far above average' (score of 7), where 'average' is equal to 4. Unsurprisingly, the Enterprisers self-assess their financial knowledge as 'above average', as do the Socialites. The remaining groups all score themselves below the full-sample average, with the least confident money handlers the Contemporaries and Realists (both score themselves as 'somewhat below average' financial knowledge, with 3.12 and 3.11 respectively).

On debt repayments, respondents are asked about their agreement with the statement: *My monthly debt repayments (including Buy Now Pay Later) are a heavy burden*, on a six-point Likert scale, where a lower score indicates a lighter debt burden. The Enterprisers are least likely to feel their debts are a heavy burden, with an average score of 1.95, followed by the Minimalists (2.27) – both scoring below the full sample average of 2.57. In contrast, Contemporaries are the most burdened by their debt repayments, scoring over one point higher than the sample average. Socialites and Realists both have average scores slightly above and below, respectively, a neutral response to the question, a score of 3.

For the remaining two financial vulnerability measures, we ask respondents on six-point scales (shown below) how easily, (a) *Would you be able to cope with an unexpected expense of $500 today?* and, (b) *Does your monthly income currently allow you to get to the end of the month?* In both cases, a lower score indicates a respondent finds it easier to cope with an expected expense or get to the end of the month.

Would you be able to cope with an unexpected expense of $500 today?					
(1)	(2)	(3)	(4)	(5)	(6)
Yes, very easily.	Yes, easily.	Yes, but I would have to withdraw from savings.	Yes, but with some difficulty.	Yes, but with great difficulty.	No.
Does your monthly income currently allow you to get to the end of the month?					
(1)	(2)	(3)	(4)	(5)	(6)
Very easily, I manage to save most months.	Easily, I manage to save some months.	Easily, although I do not have money left over to save.	With some difficulty - I only just manage to make ends meet.	With difficulty - I have to withdraw from savings some/most months.	With great difficulty - I have to borrow from third parties to make ends meet.

The Enterprisers self-reported as the most financially resilient group, scoring below the full sample average for both measures – the only money personality type to do so. The Minimalists and Socialites are able to make ends meet each month, although without saving a great deal on average, and were able to cope with an unexpected expense of $500, albeit by dipping into their savings. Perhaps providing insight into their dislike of thinking about money management, the Contemporary group self-report as the least likely to cope with an expected expense or to make ends meet, scoring above the full sample average and other personality types. The next most vulnerable group were the Realists.

Table 4: Average scores of subjective financial knowledge and financial wellbeing

	Full Sample	Socialite	Contemporary	Minimalist	Realist	Enterpriser
Subjective financial knowledge	4.17	4.36	3.12	4.03	3.11	4.87
Debt repayments are a burden	2.57	3.29	3.74	2.27	2.76	1.95
Unexpected expense	3.19	3.33	4.46	3.31	3.95	2.28
Making ends meet	2.86	2.94	4.02	2.85	3.66	2.17

Implications for Sorted and future research

Te Ara Ahunga Ora (TAAO) has conducted research on both the financial capability (Galicki 2021; Kempson and Evans 2021) and the money attitudes of New Zealanders (Gamble 2022). The study reported here explores one aspect of a person's financial life, their personality traits, and how they manifest into financial behaviours, to provide insight to a Sorted user about their *money personality*. In this section, we highlight potential links to TAAO's previous research and its implications for future research.

TAAO priority groups, Māori, Pacific peoples, women, and young adults have been previously identified as reporting lower financial wellbeing (Galicki 2021) and requiring targeted support to increase financial confidence, capability, and wellbeing. While we do not wish to over-generalise the findings presented in this report, we do find supporting evidence that these groups are underrepresented in the most confident personality type The Enterpriser and overrepresented in those potentially vulnerable to problematic spending behaviours, The Socialite and The Contemporary.

According to the 2022 Sorted User Survey, under 35-year-olds are more likely to provide tools/calculators/quizzes as a reason for using the Sorted site (Sorted User Survey, 2022), suggesting the Money Personality Quiz may be useful in reaching this audience. Additionally, previous TAAO work found three personality dimensions relevant to New Zealanders namely, 'cautious independence', 'spontaneity', and 'social connection' (Consumer insights to support Sorted Money Week 2022, pgs. 20 and 21). There are likely links between The Enterpriser and those in the first group, with The Contemporary and The Socialite types sharing similarities with the spontaneous and socially connected groups. Having deeper insight into a user's money personality also allows Sorted to provide targeted and relevant information once a user is on the site.

There are also potential overlaps with Gamble's (2022) consumer segmentation work, shown in Figure 6. For example, The Contemporary is more likely to be in the Daily Distressed group, while The Minimalist is likely an Active Budgeter or Comfortable Maintainer. Gamble's Aspirational Acquirers may share some similarities with The Realist, and The Enterpriser may fall into the Steady Squirrel group. The Socialite likely shares characteristics with both Social Spenders and Aspirational Acquirers. Future research to capture the financial capability and wellbeing characteristics of each money personality in more detail may further aid policymakers in designing useful interventions. Additionally, using the five money personalities identified here may provide a useful analytical tool in future financial behaviour and wellbeing work, including over-indebtedness and financial education research.

Figure 6: Consumer segmentation,
Sourced from Gamble (2022) – New insights into how people think about money [slide 4].

Additional tables

This section contains tables mentioned in the text but excluded above for brevity and readability.

Quiz question selection

Table 5: Correlation of individual items against the corresponding full (trait) scale

	Survey Item	Survey Score - Correlation	TAAO Survey* (Preliminary)	AUT Survey* (Preliminary)
	Materialism (6 items)			
M1	*I admire people who own expensive homes, cars and clothes*	0.7487		Y
M2	The things I own say a lot about how well I'm doing in life	0.7392		Y
M3	Buying things gives me a lot of pleasure	0.6392		Y
M4	I like a lot of luxury in my life	0.7304		Y
M5	My life would be better if I owned certain things I don't have	0.7266		Y
M6	I wouldn't be any happier if I owned nicer things	0.3680		Y
	Impulsivity			
I1	*I am impulsive and tend to buy things even when I can't really afford them*		Y	Y
	Present Orientation			
PO1	*I tend to live for today and let tomorrow take care of itself*		Y	Y
	Spender/Saver			
SS1	*I am a spender rather than a saver*		Y	
	Risk Tolerance (2 items)			
RT1	*I am willing to take financial risks in order to substantially increase my assets*	0.9436		
RT2	In money matters, I tend to be willing to take risks	0.9385		
	Risk Aversion (5 items)			
RA1	I think it is more important to have safe investments and guaranteed returns than to take a risk for a chance at the highest possible returns	0.5735		
RA2	If I think an investment will be profitable, I am prepared to borrow money to make this investment	0.5254		
RA3	I do not invest in shares, because I find this too risky	0.7194		
RA4	I want to be certain that my investments are safe	0.7051		
RA5	*I am prepared to take the risk of losing money, when there is also a chance to gain money*	0.7212		
	Loss Aversion			
LA1	*For me, the pain of losing is more than the pleasure of winning*			
	Generosity/giving (2 items)			
G1	*I give money to others when I can't afford to*	0.8970	Y	
G2	I am generous when it comes to koha / gifting money to others	0.8676	Y	
	Money Values			
MV1	*Money isn't my priority*		Y	
MV2	*Money is a symbol of success*			
	Extraversion (4 items)			
E1	I describe myself as extroverted	0.8235		
E2	I see myself as someone who is talkative	0.8274		
E3	*I see myself as someone who is outgoing, sociable*	0.8693		
E4	I see myself as someone who is reserved	0.6679		

Table 5, continued: Correlation of individual items against the corresponding full (trait) scale

	Confidence (9th item Money Management)			
MM9	*I am good at handling money*	0.6391		Y
	Money Management (9 items, 8 listed here plus Confidence)			
MM1	I keep an eye on how much money is coming in and how much is going out	0.6888	Y	Y
MM2	I always know exactly how much money I owe	0.7435		Y
MM3	*I monitor my financial statements*	0.7647		Y
MM4	I put money away in advance to be able to pay my bills	0.7414		Y
MM5	I always repay my bills on time	0.7550	Y	Y
MM6	I make detailed budgets for my expenses	0.6369		Y
MM7	I stay within my budget(s)	0.7501		Y
MM8	My finances are disorganised	0.6883		Y
	Neuroticism (3 items)			
N1	I get stressed / anxious thinking too much about my finances	0.7913	Y	
N2	*I see myself as someone who gets nervous easily*	0.8619		
N3	I see myself as someone who is relaxed, handles stress well	0.7063		
	'Retail Therapy' (Correlation with Neuroticism index)			
N4	*If I'm sad / lonely / anxious / stressed, I buy things to make myself feel better*	0.3783		
	Pleasure (3 items)			
P1	I enjoy managing my finances and money	0.7904		
P2	*I enjoy making investment decisions / transactions*	0.9254		
P3	I enjoy following trends in investing and money management	0.8829		
	Money Goal (Multiple choice)			
GOAL	*What's the next most important thing you'd like to do with your money?*			

*Preliminary data from two surveys (referred to as 'TAAO Survey' and 'AUT Survey', respectively) informed the development of the Questionnaire and subsequent analysis.

The selected item for inclusion in the Money Personality Quiz is denoted in italics.

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