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Geoff Davey is one of Australia's financial planning pioneers. The firm he founded was, in 1975, among the first to offer financial planning, and the first to do so as part of a multi-disciplined service. When he retired from Davey Financial Management in 1989, the firm was a national partnership with 100 employees which specialised in providing a comprehensive financial management service to high-income earning self-employed professionals and their practices.

In 1995 he joined forces with Paul Resnik, another industry veteran, to found ProQuest. ProQuest's focus is on the intangibles that operate at the client/adviser interface. ProQuest's mission is to develop tools that improve clients' understanding of themselves and advisers' understanding of their clients. ProQuest's web-based Risk Profiling system (US Patent Applied for 1998) is the first that meets scientific standards for test construction. The system enables a 'best practice' planning methodology that is transforming financial advisory services.

Title:
Scientific Risk Profiling

Abstract:

This paper examines what is known and understood, from academic and other research, about risk tolerance, how to assess it and how to apply that assessment in the planning process.

It discusses a new assessment technique, scientific risk profiling, which is based on psychometrics, a blend of psychology and statistics, and a new methodology for dealing with risk tolerance in the planning process.

Scientific Risk Profiling

Risk Tolerance, Risk Profiling and the Financial Planning Process

Table of Contents

1. Introduction.....	2
2. What is known and understood about risk tolerance?.....	3
3. "Risk Profile" vs. "Investor Profile"	7
4. What does a Scientific Risk Profiler actually do?	8
5. Where does Risk Profiling fit into the financial planning process?	9
6. How should planners deal with a "risk tolerance mismatch"?.....	13
7. Conclusion	16

1. Introduction

Financial planners carry out four separate risk-related activities in servicing their clients.

- Assessing the client's risk tolerance.
- Applying that assessment in formulating advice.
- Explaining the risk inherent in their recommendations.
- Educating clients about risk.

This paper addresses the first two activities.

Experienced planners invariably accept their professional, ethical and legal obligations to assess clients' risk tolerance and to apply that assessment in formulating their advice.

However, there is no general agreement as to what risk tolerance is, how it should be assessed or how that assessment should be applied.

Further, discussions about assessing and applying risk tolerance often become confused because of the inclusion of ideas to do with explaining risk and educating clients.

Yet, undoubtedly, risk tolerance and the client's risk profile are critical issues.

"I believe that ... the single most important factor in guiding clients towards a successful investment program (is) their personal risk profile."

Harold Evensky, CFP, Chairman, Evensky, Brown & Katz

In dealing with these issues, planners use a wide assortment of techniques ranging from short form questionnaires to extensive, structured Q&A discussion.

How effective are these techniques? What due diligence has been done? Would they stand scrutiny by the Courts? Has the planning industry made the mistake of assuming that because it understands risk it has the disciplines to assess risk tolerance?

Many in the industry have serious doubts and see the whole area as being financial planning's Achilles heel.

"... it is the requirement of planners to define an investor's tolerance for risk that has been the great struggle, and failure, of Modern Portfolio Theory."

David Loeper, CEO, financeware

Against this background of uncertainty, a system which offers robust, objective risk tolerance assessment and a transparent, process-driven methodology for applying that assessment in the planning process would represent a major advance.

Such is the promise of Scientific Risk Profiling.

2. What is known and understood about risk tolerance?

Over the past twenty years, the last ten in particular, risk, risk tolerance and risk tolerance testing have been the subject of numerous academic and other research studies¹. There is now a considerable body of formally refereed knowledge available through a wide variety of specialist publications.

This paper draws on the results of those studies and unpublished studies for which specific references are provided in the endnotes. Unfortunately very little of this knowledge has yet found its way into the mainstream thinking of the financial planning industry

An individual is exposed to risk in any situation where there is uncertainty about at least one of the possible outcomes. Risk tolerance is the extent to which an individual chooses to risk experiencing a less favourable outcome in the pursuit of a more favourable outcome.

Research has indicated four types of risk tolerance - ethical, social, physical and financial. Individuals behave consistently within types but not between types. For example, hang gliding will correlate with mountain climbing but not with public speaking.

Risk tolerance is a psychological trait, i.e. a relatively enduring way in which one individual differs from another. An individual's risk tolerance² will be a function of their 'nature' (in essence, what is genetically driven), 'nurture' (what has been learned) and 'situation'. Making an accurate assessment of an individual's risk tolerance is a challenge because of the intangible nature of the attitudes, values, motivations and preferences it entails, and because of the potential for miscommunication when discussing such intangibles³.

Unlike, say, height or weight, there is no physical unit of measurement for risk tolerance. An individual's risk tolerance can only be measured relative to others on a constructed scale (in much the same way as IQ is measured), using psychometrics.

Psychometrics, a blend of psychology and statistics, is the science of test construction for intangibles such as risk tolerance.

When measured by a psychometric instrument, risk tolerance is shown to be Normally distributed and, hence, the standard statistical relationships apply.

Within financial risk tolerance, there is no evidence of sub-factors^{abc}. That is, there is no evidence of there being, say, investment risk tolerance and employment risk tolerance (or borrowing risk tolerance, etc.)

Risk tolerance has a moderate positive correlation with income, wealth and education and a moderate negative correlation with number of dependants and age (in all cases, with correlation coefficients of around 0.4^{bc}.)

There is also a significant gender difference which persists when other demographic factors are subtracted. The average risk tolerance of males is of the order of one standard deviation greater than that of females^c. This is consistent with the gender difference results found in studies of the Overconfidence bias.

¹ Readers can obtain a list of references at www.risk-profiling.com/references.htm.

² Hereinafter, a reference to "risk tolerance" should as a reference to "financial risk tolerance".

³ For a detailed discussion of the issues see "Some Guidelines For Financial Planners in Measuring and Advising Clients About Their Levels Of Risk Tolerance", Callan, V.J. and Johnson, M., Journal of Personal Finance, August 2002, www.risk-profiling.com/Downloads/MeasuringRiskTolerance.pdf

Individuals' estimates of their risk tolerance scores correlate at 0.68 with actual scores^b. By way of comparison, the psychometric standard for reliability is a correlation of around 0.85. Planners' estimates of their clients' risk tolerance scores correlate at 0.36^b. This means that though individuals generally have reasonably (but not sufficiently) accurate self-impressions, significant accuracy is lost in the process of conveying this information to their planners⁴.

When data on 20,700 individual risk tolerance tests from different sources was compared^d, some interesting differences emerged.

Source	Mean	Standard Deviation
Norms Group (The Adult Population)	50	10
Clients of Financial Advisers	55	12
Visitors to Financial Websites	64	12
Financial Services Students	65	11
Financial Services Professionals	64	14

These figures confirm the conventional wisdom that familiarity with and understanding of financial issues leads to greater risk tolerance.

A closer examination of the Financial Services Students and Professionals data reveals that when their answers are compared to those from the Norms Group with similar scores, there is a tendency for the 'emotional' questions to have lower scores and the 'practical' questions to have higher scores.

This result indicates that Financial Services Personnel are more risk tolerant because they know more rather than because they are naturally more risk-seeking, which supports the view that familiarity with and understanding of financial issues leads to greater risk tolerance.

Overall, risk tolerance is a relatively stable trait.

- A US test/re-test study^b over periods ranging from 30 to 120 days produced a correlation of .91 between the two sets of scores.
- An individual's 'nature' tends not to change.
- 'Nurture' changes normally occur slowly. However, an individual who is being exposed to financial planning for the first time could be expected to experience a rapid increase in their understanding of and familiarity with financial issues.

⁴ A correlation of 0.36 means that 1 in 6 planners' estimates are in error by two or more standard deviations. To put this in perspective, planners' estimates would be more accurate if they made no attempt to assess clients' risk tolerance and simply assumed that all their clients were of average risk tolerance.

The above comments should not be taken as a criticism of financial planners. Such inaccuracy about intangibles occurs in all professional relationships, be it doctors and patients, lawyers and clients, teachers and students, etc.

Until the advent of scientific risk profiling, planners did not have the tools and techniques to make valid and reliable assessments.

- 'Situational' changes will usually be gradual, although significant life events may cause sudden change.
- Accordingly, risk tolerance should be re-assessed:
- for a new client, before each of the first few major reviews (because the client's know-how is likely to have increased),
- after any major life or financial event, and
- otherwise, every two or three years.

Some planners believe that their clients' risk tolerance is (highly) sensitive to investment market sentiment. However, time-based analysis^d of 11,421 client risk profiles (average score 55.3 with standard deviation of 12.4) completed during the period May 1999 to February 2002 shows no evidence of such sensitivity.

Period		Scores		
From	To	Count	Average	Std Dev
05/99	07/99	372	54.9	13.3
08/99	10/99	457	56.6	11.9
11/99	01/00	462	55.3	12.2
02/00	04/00	811	54.3	12.7
05/00	07/00	1052	55.2	12.8
08/00	10/00	1102	55.1	12.6
11/00	01/01	968	55.2	12.5
02/01	04/01	1289	55.2	11.9
05/01	07/01	1616	55.8	12.0
08/01	10/01	1593	55.5	12.1
11/01	01/02	1355	54.9	12.8

If one considers clients of financial advisers as a population, the above table can be seen as representing the results of successively sampling that population on a quarterly basis⁵.

One possible explanation of why some planners think clients are highly sensitive to market conditions is that they fail to establish realistic client expectations because their value proposition is based on a promise of "good" investment performance. When, as is inevitable, their clients become disenchanted they interpret this as a change in risk tolerance rather than as a reaction to having been misled.

There is certainly strong anecdotal evidence that planners (unconsciously) project their own attitudes and values onto their clients. For example, consider the experience of one Australian five-planner firm that, upon adopting scientific risk profiling, systematically profiled all existing clients. Previously, there had been noticeable differences from one planner to another in average client risk tolerance (as assessed by the planner), even though all clients were from more or less the same target market. No such differences were found when the clients were assessed objectively.

⁵ The data in the table is for clients of Australian advisers. Australian markets have been through a boom/bust cycle similar in timing to US markets but not as severe.

Again, this is not intended as a criticism of planners per se, rather it is a specific example of the difficulties inherent in obtaining accurate information using subjective processes.

3. “Risk Profile” vs. “Investor Profile”

The term “Risk Profile” does not have a commonly accepted meaning. Sometimes it is used to denote a description of a client’s risk tolerance and sometimes to denote a description of an investment strategy.

Here it is used with the former meaning. Systems which classify clients by investment strategy, though often called Risk Profilers, are referred to here as Investor Profilers.

Both Risk Profilers and Investor Profilers are used by planners in the process of selecting an asset allocation, where the planners’ triple challenge is,

- **To determine an asset allocation that will achieve the client’s financial goals.**
- **To determine whether that asset allocation is consistent with the client’s risk tolerance.**
- **If there is no asset allocation which meets the first two challenges, to have a process for resolving the mismatch.**

In satisfying the triple challenge, Risk Profilers must be used in conjunction with a projection/modelling system as discussed below in **“5. Where does Risk Profiling fit into the financial planning process?”**

The typical Investor Profiling system combines answers to 10-20 questions about circumstances, attitudes, needs, experiences, time horizon, etc. to select one of, usually, five profiles, each of which describes an investment strategy and corresponds to a particular asset allocation.

There is certainly an immediate appeal in the Investor Profiler’s promise of being able to deal with the triple challenge in a single step. However, even relatively cursory due diligence would reveal that Investor Profiling is a deeply flawed process.

Its most obvious flaw is that, if there is a gap between the asset allocation that will achieve the client’s goals and the asset allocation that is consistent with the client’s risk tolerance, not only is the gap never identified but it is “resolved” by a compromise based on the test designer’s values rather than the client’s values.

Investor Profilers dis-empower both client and planner. Neither is in a position to know whether the recommended asset allocation satisfies the client’s financial goals or is consistent with the client’s risk tolerance. And it certainly could not be said that the planner had made an assessment of the client’s risk tolerance or that the client had given informed consent⁶ to an investment strategy arrived at in this manner.

Investor Profilers are commonly used in online direct sales services, by large planning groups seeking standardised processes and by planners who either do not understand the triple challenge or are satisfied with a ‘quick fix’ solution.

Investor Profilers were never an ideal solution for what is readily acknowledged as being a difficult set of problems. However, now that scientific risk profiling can be coupled with robust modelling software to produce a demonstrably superior planning process, their continued use will be difficult to justify.

⁶ Informed consent requires that the client understands the risk involved in what is being recommended and, in particular, if the risk is greater than their risk tolerance, that other alternatives were considered and that this alternative was chosen by the client.

4. What does a Scientific Risk Profiler actually do?

A Scientific Risk Profiler mirrors what many professional planners actually do now - either intuitively or using non-scientifically derived questionnaires. Such planners would,

- Form a view as to the client's risk tolerance, by conducting a question-and-answer discussion about the client's attitudes, values, preferences and experiences in matters involving financial risk, or by using a simplistic questionnaire.
- Feed back to the client a written summary of that view in order to obtain the client's confirmation that the planner's understanding is accurate and, if required, amend the summary to reflect the client's feedback.
- Consciously or sub-consciously, make a norm-referenced rating of the client's risk tolerance using as norms those derived from the planner's experience, i.e. "This client is Low/High/Average, etc. compared to my other clients."

Scientific Risk Profiling follows that process with these key differences,

- The questions are in jargon-free, plain English that has been tested for understandability and answerability, and hence explanation/clarification by the planner is unnecessary.
- The questions have been tested for psychometric validity and reliability⁷ and cover a broader range of topics than would typically be covered by a planner.
- Because the questions are asked in a controlled manner without the planner being involved, interaction with the planner cannot influence the outcome.
- The norms-referenced rating (risk tolerance score) is calculated statistically against an adult population sample with a known, high level of accuracy, e.g. on a 0 – 100 scale, ± 5 with 95% confidence.
- The summary is produced automatically in a structured format by way of a plain English risk profile report. There is no 'black magic' interpretation involved in the report. It is simply a concise précis of the answers given.
- Differences between answers given by an individual and those typically given by others of similar risk tolerance can be identified, so allowing precise recognition of individual differences.

Importantly, Scientific Risk Profiling does not replace discussion between planner and client. Rather, the completed questionnaire and risk profile report become inputs to that discussion. This approach enables an in-depth understanding to be reached far more accurately and quickly than by discussion alone.

Additionally, clients react positively, citing improved understanding of themselves in relation to risk and of risk itself. On survey⁸, 98% said it was easy to do their profile and 94% said doing it was a worthwhile exercise.

⁷ In psychometric terminology, "valid" means that the instrument does test what it purports to test and "reliable" means that it does so consistently with a known level of accuracy.

⁸ *financial passages* Members Survey, 2000 www.risk-profiling.com/finpassages.htm

5. Where does Risk Profiling fit into the financial planning process?

When a client seeks the assistance of a planner in respect of a comprehensive, long-term financial plan, it will be in the context of a financial mission along the lines of the following,

"To manage my financial affairs in such a way as to allow me to achieve, as fully as possible, those of my personal goals that have a financial dimension."

In this context, the client's risk tolerance can be seen as their trade-off⁹ between two competing goals, on the one hand, not putting their financial well-being at risk and, on the other, making the most of their financial opportunities.

One of the threshold questions to be answered, whether actually asked by the client or not, is a reality check, namely,

"Given my circumstances, how realistic are my goals?"

In targeting an asset allocation, this reality check question becomes:

"Given my risk tolerance and my current and anticipated financial circumstances, can you construct an investment portfolio that will allow me to fully achieve my personal goals?"

To answer this question, the planner must first (help the client) develop financial and investment goals from their personal goals, which may themselves need clarification. (With regard to risk tolerance, the financial goal is to follow a strategy that is consistent with that risk tolerance.)

Then the planner can address the reality check question with either of two approaches:

"Is the client's risk tolerance sufficient to allow the rate of return that will be required?"
or

"Does the rate of return that will be required involve risk within the client's risk tolerance?"

To do this, the planner must be able to compare two separate assessments, risk tolerance and risk required, where

- **risk tolerance is the level of risk the client would normally choose to take, and**
- **risk required is the level of risk inherent in the return that will be required to achieve the client's goals.**

The point of common ground upon which clients find it easiest to make this comparison, is with the Defensive/Growth asset allocation split (where Defensive assets are cash and fixed interest, and Growth assets are shares and property.)

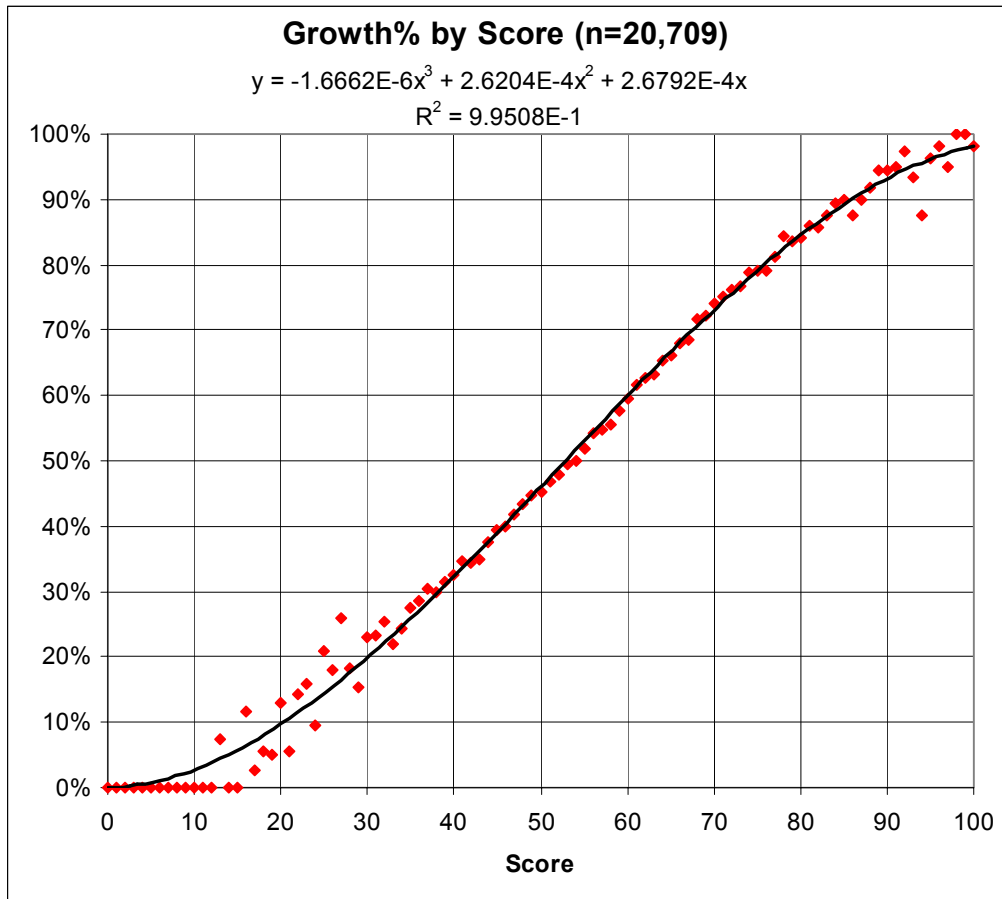
In a well-constructed portfolio, risk is best measured by volatility and the Defensive/Growth split determines (broadly) both the expected return and the expected volatility.

By analysing answers to questions about sensitivity to volatility, etc. from completed Risk Profiles and the performance characteristics of portfolios with varying Defensive/Growth

⁹ More generally, risk tolerance can be seen as representing a composite of all the "fear/greed" trade-offs. For example, it would include the regret avoidance trade-off between on the one hand wanting to avoid feeling that you would have been better off if only you'd taken less risk and on the other that you would have been better off if only you'd taken more risk.

splits, it is possible to express a risk tolerance score as a % of Growth Assets (with which the client will be comfortable.)

The points on the chart¹⁰ below show, for risk tolerance scores on a 0 - 100 scale (mean 50, standard deviation 10), the average preference for Growth Assets.

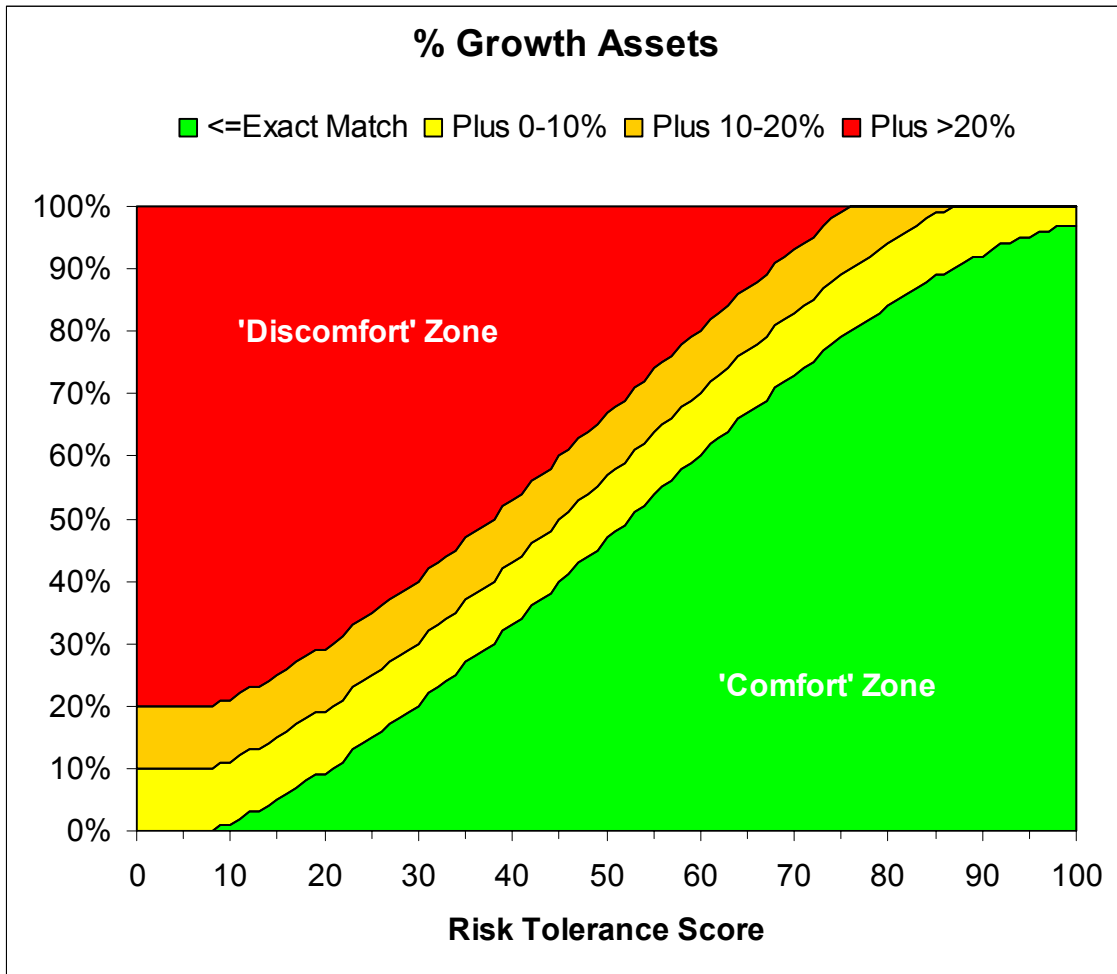


The line of best fit algorithm allows each risk tolerance score to be expressed in terms of a % of Growth Assets which will be consistent with the client's risk tolerance. For example, a risk tolerance score of 50 translates to 47% Growth Assets.

Of course, while the algorithm provides an exact match, it needs to be recognised that a client is unlikely to perceive a difference in volatility between a (well-constructed) portfolio with 47% Growth Assets and one with 57% Growth Assets. So, it is reasonable to say that an individual with a risk tolerance score of 50 should be 'comfortable' with a portfolio of up to 57% Growth Assets and that significant 'discomfort' won't occur until the Growth Assets approach or exceed 67%.

¹⁰ For a more detailed explanation of this and the next chart, see ProQuest's Linking Spreadsheet [www.risk-profiling.com/Downloads/LinkingAssetAllocations\(Excel97\).xls](http://www.risk-profiling.com/Downloads/LinkingAssetAllocations(Excel97).xls). For information about the study methods used to produce these charts and to examine the relationship between risk tolerance scores and historical portfolio performance, see ProQuest's Risk and Return Guide and Charts www.risk-profiling.com/Downloads/Risk and Return Guide and Charts.zip.

The next chart shows the gradation from 'comfort' (green) through to 'discomfort' (red) for the 0-100 risk tolerance score range.



Where a planner does not individually customise an asset allocation for each client but rather chooses from a standard set of asset allocations, the 0 – 100 risk tolerance scale can be divided across the standard set so that the asset allocation that best fits the client's risk tolerance can be identified.

The next chart shows 'best fit' risk tolerance score ranges for a sample set of five standard asset allocations.

	Standard Asset Allocations				
	A	B	C	D	E
Defensive/Growth	90/10	70/30	50/50	30/70	10/90
Risk Tolerance Scores	0 - 28	29 - 45	46 - 59	60 - 77	78 - 100

Once a planner is able to express a valid and reliable risk tolerance score as an asset allocation consistent with the client's risk tolerance, the reality check becomes

straightforward. The performance characteristics of that asset allocation are used in the projection/modelling software and the results compared with the client's goals.

The reality check will reveal one of three possible situations:

Undershoot

"It appears unlikely that you will be able to achieve your goals given your present and anticipated financial resources and the level of risk you wish to take."

On Target

"It appears likely that you will be able to achieve your goals given your present and anticipated financial resources and the level of risk you wish to take."

Overshoot

"It appears likely that you will be more than able to achieve your goals given your present and anticipated financial resources and the level of risk you wish to take."

Anecdotal evidence suggests that the frequencies of these situations are approximately 60%, 30% and 10%, respectively.

Each situation gives rise to a different type of discussion. However, the Undershoot situation requires particular consideration and it is examined further below.

Of course, in many instances the client is not an individual but a couple, a partnership or the like. In such cases, the individuals concerned are likely to have differing risk tolerances. In order to proceed with the development of a joint plan, the planner needs to have instructions from the client as to the level of risk tolerance to be applied in the plan. Using the projection/modelling software with the asset allocations that correspond to each individual's risk tolerance, it is a simple task to illustrate the consequences of the differences, making it that much easier for the individuals concerned to reach a joint decision.

Planners who use scientific risk profiling report¹¹ that it improves the quality of their advice, saves time, makes it easier to prove that "know the client" obligations have been satisfied, gives them a marketing advantage and is easy to incorporate into their existing processes.

Management appreciates the major compliance advantages scientific risk profiling delivers. Not only does it reduce the likelihood of a complaint, but it also provides a robust defence in the event of one. Further, it enables the compliance function to be far more process-driven and so managed on an exception-reporting basis.

¹¹ ProQuest Users Survey, 2000

www.risk-profiling.com/Downloads/ProQuestUserBaseSurveyResults.pdf

6. How should planners deal with a "risk tolerance mismatch"?

In any new endeavour, there is nothing unusual about someone's goals being initially over-optimistic. More often than not we find that we have to scale back or modify our ambitions in the light of practical considerations. We value well-informed, expert advice to the effect that we are being overly ambitious. Such advice gives us the opportunity to reconsider our actions and avoids our being disappointed because we didn't understand what we were getting ourselves into.

An Undershoot situation can, in many cases, be seen as an example of overly ambitious, initial goals. It highlights a mismatch between:

- the client's shorter term goals (present lifestyle, personal exertion income, saving/spending trade-off, sense of security, etc.), and
- the client's longer term goals (dependents' education, retirement timing, future lifestyle, bequests, etc.)

Resolving the mismatch which gives rise to an Undershoot situation will require:

- increasing the amount to be invested, and/or
- reducing or deferring or foregoing longer term goals, and/or
- accepting more risk.

It is possible that none of these alternatives, individually or in combination, will be of immediate appeal to a client. While some clients might react negatively to being told they may not be able to have everything they were hoping for, most (if not all) will appreciate being alerted to a problem of which they were unaware.

To the extent that the planner's value-adding proposition involves being an expert in identifying and helping solve the client's financial problems, an Undershoot situation presents an early opportunity to demonstrate that expertise.

However, it is the client's responsibility and prerogative to decide if, when and how mismatches are to be resolved. The planner can guide, suggest options, illustrate alternatives and point to consequences, but the decisions are ultimately the client's. As it is the client's goals which are at stake, it must be the client who decides the priorities and accepts responsibility for any consequent compromises.

There are a number of considerations that are critically relevant to resolving an Undershoot situation:

- A new client being introduced to the issues relevant to a comprehensive, long term, financial plan can feel overwhelmed, even threatened, by the strangeness and complexity of it all ... but may be reluctant to convey this to the planner for fear of appearing inadequate. Planners, on the other hand, are so familiar with what to them are bread and butter matters that it can be difficult for them to sense how strange it all seems to a new client.

It is natural for anyone feeling themselves surrounded by the unfamiliar not to want to commit themselves to any particular course of action while they are not completely confident that they fully understand all the ramifications. New clients may want to make as few "big" decisions as possible and, if a decision can be deferred, may see that as an attractive alternative.

Planners can easily under-estimate the perceived magnitude of the decisions they are asking the client to make and can push for decisions in a time-frame that is too quick for the client. Clients will not feel fully committed to decisions made in this manner. They will be slow to decide in the first place, may want to revisit the decision after the planner had assumed there was agreement to proceed and, if a decision produces a "bad" outcome, will be inclined to blame the planner for having pushed them into doing something they didn't want to do in the first place.

- Planners are significantly more risk tolerant than their clients - on average, by about one standard deviation. Most planners are aware that this is so but many are surprised by the magnitude of the difference when it is measured objectively.

It is often the case that planners would not be discomforted by the level of risk inherent in the return required to satisfy the client's goals. Hence, planners are inclined to see the mismatch exclusively in terms of risk and risk tolerance (rather than a more general goals mismatch) and to see its solution being to do something about risk and/or risk tolerance. Accordingly, there is a tendency for planners to encourage clients to accept more risk than the clients would choose if left to their own devices.

- Over the long term, little is lost by following a less risky investment strategy for the first year or so. Even for a term as short as ten years, achieving a return over the first two years that is less than the average required for the ten years, will only marginally increase the rate required for the remaining eight years. The longer the time frame, the less significant is the impact of a 'slow start'.
- A new client's risk tolerance is likely to increase as the client becomes more familiar with financial issues and understands them better. Hence, the gap between risk tolerance and risk required can be expected to narrow and might even disappear.
- The time of greatest stress in the relationship between the client and their planner is most typically during the first few years.

A market downturn that occurs during this time can cause the value of the client's investments to fall below their purchase price. The client may panic and sell - particularly if they discover that they have been exposed to a level of risk they would not willingly have accepted. Further, having crystallised the loss, they are unlikely to re-enter the market until a recovery is well underway. Such a client could well become a plaintiff.

- There will be a "halo" affect surrounding the client's initial interactions with a planner.

The new client's confidence in the planner and the decisions being made will rise to a peak at about the time the plan is being implemented. From there it will decline until there is reinforcement. Some months after the plan has been implemented, the client may have difficulty recalling precisely why decisions were made and the client's confidence in the whole process may have declined significantly.

In the early years of the relationship, the development of the client's confidence in the planner and the plan can be very much a continuing process of two quick steps forward during periods of interaction with the planner followed by one slow step back between those periods.

Planners should be mindful that they may be asking their clients to commit to decisions when the clients' confidence is at a temporary peak.

Taking all these factors into account, it is most important that client and planner both realise that the Undershoot situation does not have to be permanently and completely resolved *ab initio*. Client and planner are embarking on a long term relationship. Anything that is put in place should be reviewed at least annually.

It may be that, having become aware of the mismatch, the client will be willing to invest more or lower/defer/forego long term goals. But too often the solution proposed by the planner involves the client taking more risk than they would otherwise be willing to accept. Planners should resist the temptation to reach a quick-fix solution when other alternatives, potentially more acceptable to the client, are available.

7. Conclusion

Planning is a blend of art and science. It develops through advances in either. Until now there has been little science in how we deal with risk tolerance. To find it we need to look outside financial disciplines.

A scientific solution to the challenges of risk tolerance represents a significant advance in planning best practice. When allied with the planner's art, scientific risk profiling can deliver benefits for all concerned – clients, planners and dealers.

*“Nothing tends so much to the advancement of knowledge
as the application of a new instrument”*

Sir Humphrey Davy,
Inventor and Natural Philosopher

*“There are three steps in the revelation of any truth:
in the first, it is ridiculed; in the second, resisted;
in the third, it is considered self-evident.”*

Arthur Schopenhauer,
Philosopher

^a Roszkowski, M. J., The American College, Bryn Mawr, PA. "Technical information on The Survey of Financial Risk Tolerance", 1993 -1997

^b Elsayed, H. and Martin, J., Chandler & Macleod Consultants, "Survey of Financial Risk Tolerance- Australian Technical Report", 1998

^c Adams, A. and Bright, J., University of New South Wales, Applied Psychology Unit, "ProQuest Risk Profiling: Technical Data", 2000

^d ProQuest Research Studies 2002