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Analysis of the proximal causes of selections

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Abstract

This paper focuses on the survey respondent as a decision-maker and provides concepts and procedures accounting for the proximal causes of selection and non-selection of options. It is suggested that sufficient identifications and comparative evaluations jointly determine selections. Sufficient identification refers to any cause generating selection or rejection of an option without reference to other options. Some factors, such as option unawareness, unfamiliarity, unavailability, inaccessibility, ineligibility and so on, render an option unselectable. Other sources of sufficient identification, such as reflexes, habits, behavioural scripts, and so on, render a selection automatic. Comparative evaluations, by contrast, require comparison between options or with a criterion. A respondent model is developed to incorporate these concepts. Aggregation of respondent results provide measures of share contributions attributable to sufficient identification and comparative evaluations, respectively. Share contributions are also attributable to specific sources of sufficient identification. Examples are provided. A computer program is available to execute the procedures.

Analysis of the proximal causes of selections

Introduction

There are a variety of perspectives from which questionnaire surveys may be viewed. The perspective of this paper is that of the respondent as a selector, chooser, or decision-maker with respect to the options posed by questions. The principal interest is analysis of proximal causes of respondents' selections. Here, proximal causes are those factors that most immediately determine an option's selection.

If the purpose of research is simple enumeration of selections then this more detailed research is unnecessary. But when a closer understanding of responses is sought, it is of substantial importance to have a firm understanding of the most basic and immediate influences on respondent choices. This should be undertaken before launching an analysis of the distal variables, because their effects are mediated by the proximal causes.

The model proposed in this paper suggests that two major classes of proximal cause should be considered jointly to obtain a full understanding of selection outcomes. The two proximal factors are:

1. Sufficient identification.
2. Comparative evaluation.

Either or both may contribute to a selection made by a respondent. In turn, working backwards, the causes of sufficient identification and comparative evaluation, respectively, will often be unrelated.

The defining characteristic of a sufficient identification is that it is a selection process that is applied to an option without reference to any other option. Sufficient identification can be broken into two exhaustive sub-classes.

1. **Identifications that prevent an option's selection:** Examples of sufficient identifications precluding selection include: lack of awareness, insufficient familiarity, unavailability, inaccessibility, ineligibility, exclusion, elimination, indecision, and deferral. Such identifications ruling out an option's selection may be said to block comparative evaluations.
2. **Identifications that rule an option selected:** Sufficient identifications ruling an option as automatically selected include: behavioral scripts, habits, impulses, reflexes, and preclusive assumptions[1]. This category of sufficient identification and its separation from comparative evaluations may be seen as consistent with dual process theory. (Evans, 2003) Such selections mean that all other options are

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[1] A preclusive assumption is simply a logical category which is known by a respondent to fit e.g. a category that includes his or her age. There is no need to know about other categories.

ignored i.e. blocked. Likewise, when all but one option is blocked, the remaining option is sufficiently identified for selection because no comparison is possible or necessary.

All assessments of sufficient identifications determining either selection or non-selection of an option precede comparative evaluations. Sufficient identifications may apply to one, some, all, or no options for any case. Where one or more options are blocked, the selection probabilities amongst the alternatives are ***increased*** by the corresponding amount (spread across the non-blocked options).

By contrast, comparative evaluations, are based on the relationships between options or between options and a criterion. Evaluated options are designated as selected or rejected, or tied for selection, or are assigned selection probabilities. Handling each of these is straightforward except for ties which are discussed below.

Aggregate results for sample data for sufficient identification and comparative evaluations can reveal the factor contributions to total share in terms of an adjustments from indifference. Component analysis for different types of sufficient identification are also able to be calculated and each separated into its positive and negative contributions. This is elaborated in the models and examples below. Because the factor contributions are calculated case-by-case the factor profiles are also available for further analysis.

Studies will vary in their treatment of blockages and evaluations depending on relevance to research objectives and the nature of the options considered. Some blockages may be ignored, some may be assumed to not apply, some may be elaborated, and others may be merged. For example, in relation to common household products it is often assumed that knowledge, availability, accessibility, eligibility, affordability, etc., are not blockages to evaluation and selection so long as there is recognition of the brands involved. On the other hand, studies on actual and potential usage of government services may collect detailed data on a wide range of potential blockages. (e.g. Meager et al, 2006)

In general, much research on selections involves a review of options that are unlikely to otherwise ever be considered in such a formally explicit way. Such procedures are only useful to the extent that they produce results isomorphic to those obtained in conditions of substantive relevance. When this relationship exists, useful inferences may be made about the realities of selections within defined populations. (Marder, 1997, pp. 36-37, Ajzen and Fishbein, 1980, pp 42-47, East, 1990, pp 75-79. East, 1997, pp 124-27)

The two following sections discuss the varieties of sufficient identification and the issues associated with handling of ties before proceeding to modelling of proximal causes.

Varieties and character of sufficient identification

1. *Blockages associated with lack of awareness*

The selection of an option may be blocked by lack of recognition or recall. Which is relevant may depend on the nature of the option and the context for its selection.

Sometimes it will be appropriate to provide respondents with a prompt list to confirm recognition of each option. At other times the appropriate method will be to test recall of options. These answers can also be used for filtering further questioning which is especially useful where there are many options or extensive questioning on each option.

2. *Blockages associated with insufficient acquaintance*

There may be awareness of option but insufficient know-how, capacity or familiarity to make selection. Typically, high-involvement evaluations such as type of house or car to buy, or which travel destination to go to, will require more information or experience than low-involvement decisions. Respondents may typically be sufficiently familiar with some options but not others. When respondents are lacking in familiarity of an option or options, they will prefer to say they don't know. The relevant options can be identified and treated in the same way as for unawareness.

3. *Supply and demand constraints*

Here, options may be unavailable for selection e.g. distribution or production constraints, legislative prohibition. Alternatively, options may be inaccessible due to personal circumstances or characteristics or conditions of supply. Options may be inaccessible on account of affordability, distance, and personal capabilities or disabilities, for example. Another constraint is ineligibility where access to an option is proscribed. For example, there may be the need for a ticket or coupon, being young or old enough, living in a specific place, being the right sex. Where potentially relevant to the research, such constraints need to be separately identified.

4. *Executive constraints*

Here, the way a respondent processes the options may determine whether any one option is evaluated or blocked. For example, an option may be actively excluded from comparative evaluation when considered irrelevant. Exclusion applies mainly to open-ended selection sets where respondents determine their own set composition and size. Exclusion of options may occur where the range of actively considered options is viewed as sufficient. Sometimes a single option may be considered enough.

An option in a given selection set may be eliminated from consideration i.e. ruled out of contention. Elimination occurs when the respondent considers an option irrelevant, too unattractive or insufficiently attractive to be considered for evaluation along with other set members.

To identify options excluded or eliminated it is necessary to ask which options the respondent would not consider.

Indecision is another form of executive constraint. It might be assumed to occur implicitly, when the number of options selected exceed the minimum number required. Indecision occurs explicitly when a respondent declares an inability to choose, usually between some sub-set of the options. The relevant options are in effect tied while the remainder have been eliminated. (See discussion below on ties.) Without a record of such a response or additional questioning where there are multiple selections it will be difficult if not impossible to say whether and with what frequency selections are attributable to indecision or tied comparative evaluations. Indecision may be incorrectly dealt with as equally likely selections rather than blockage. Treatment as shared selections has been shown to be invalid when there are differences in familiarity between options, for example. (Panagakis, 1989) Splitting those cases off for separate analysis in relation to future decision-making would be a preferred approach.

Deferral due to uncertainty about possible changes to circumstances is a blockage that will prevent any answer. So also will inertia where there is insufficient motivation to select any option in a set. Inertia will often apply to non-voters, for example.

5. *Automatic identifications*

When one option is automatically selected the remaining option or options are blocked by being ignored. Where it is of importance to differentiate automatic identifications from comparative evaluations, supplementary questioning is required, perhaps along the lines of: “Did you automatically choose X or did you have to weight it up?” If the option is identified as an automatic selection then the remaining alternatives should be coded as the blockage “ignored”.

TIED SELECTIONS

How selection ties are handled is important in the design and application of analytical methods for the calculation of individual selection probabilities and blockage.

The generation of ties depends on questionnaire design, measurement methods for evaluations, the practicalities of data collection in the field, respondent psychology, and the potentially ambiguous conceptual status of ties as comparative evaluation outcomes or blockages.

In practice, enforcing single “first choice” selections will often be seen as clumsy and insensitive to the realities of respondent evaluations. For example, a respondent may, explicitly or implicitly, eliminate most options but be happy to choose between those remaining because they are seen as the same. For “first choice” only collections, such a situation is problematic. Accepting multiple selections is a straightforward solution so long as analysis yields a selection probability of unity over the option set with ties treated as shared selections. This procedure applies whenever multiple selections of options are explicitly identified or implicitly inferred from equivalent rankings or ratings.

An exception to this procedure involving multiple selections, is where respondents assign selection probabilities. Here, the concept of ties is built-in to the assessment with any non-zero probability implying selection proportionate to probability. Thus, selection probabilities may be described as weighted ties pre-adjusted to yield an aggregate result of unitary selection across all options.

Not all ties are substantively the same. Nor do ties necessarily imply selection. Ties may reflect alternating or rotating selections over time, equality of standing, substitutability, uncertainty, unresolved equivocation or vacillation, or simple indecision. Alternating or rotating selections of options seen as having equal merit or as substitutable might be appropriately treated as valid evaluations. Unresolved equivocation, vacillation, or an inability to say, represents blockage, especially when remaining options have already been ruled out. Thus, a basic design consideration is whether individual ties need to be classified as shared selections or blocked evaluations, or, perhaps even a mixture when more than two options are tied. When of likely significance, it would be necessary to ask the relevant clarifying questions in the field and to code the options accordingly.

Where only firm selections are wanted, ties can be treated as missing data and the tied cases removed from the analysis.

DEVISING A SUITABLE MODEL

The bulk of questions presented to respondents seek a single selection from a list of options e.g. a candidates name from a list of candidates or the respondent's age group from a list of age groups. Usually only those providing an answer from the list are included in subsequent analysis of the relevant variable. For the purpose of exposition, each respondent that answers may be modelled as follows, where a selection denotes an individual adopting an option with a probability of one. Thus, a selected option counts as one and each other option as zero.

$$\sum_{i=1}^{O} P(O_i) = \sum_{i=1}^{O} E(O_i) = 1$$

Here the sum of the probabilities of a response to each option is equal to the sum of the evaluations. This model can also be applied to questions where options are assigned probabilities summing to unity or where ties are permitted and the unit probability is divided equally amongst the ties. Furthermore, if a set of options is rated or ranked, implied selections amongst the options reduce to this model.

Those who responded "don't" know" or "can't say" or who refused to answer the question or whose response was missed for some other reason do not fit the preceding model. These cases can be modelled as follows:

$$\sum_{i=1}^{O} P(O_i) = \sum_{i=1}^{O} \frac{1}{\sum O_i} = 1$$

Here, without prior information there is no reason to believe for any respondent that any one option is more likely to be chosen than another. The model is in accordance with Jacob Bernoulli's rule of "indifference" or "insufficient reason" for selecting one or other option. The number of options in a selection set determines the a priori expectation for each option's selection. (Bunge, 1963, pp. 234-35) Clearly, this rule also applies to all respondents ***before*** a selection is made. So it may be equally viewed as representing respondent opportunity.

All respondents in a sample, whether answering a specific question or not, can be included in a single analysis by combining each of the above models into a single respondent model and summing the results over the sample. Conventionally, missing cases are not included in the analysis but the model can be applied to every case whether missing or not. The model emphasises that each respondent's evaluations can be viewed as deviations from a base expectation.

$$\sum_{i=1}^{O} P(O_i) = \sum_{i=1}^{O}\left(\frac{1}{\sum O_i} + \left(E(O_i) - \frac{1}{\sum O_i}\right)\right) = 1$$

Reference to those who “don’t know” or “can’t say”, above, applied to those who could not provide any response to a question as a whole. It is quite common for questions to be presented only “as a whole” i.e. for all categories to be presented together from which the respondent makes a selection. This may be appropriate where the sought information is simple enumeration of selections. But it is not when an understanding of the proximal causes of both selection and non-selection is required. For example, the role of this separation of options occurs when a respondent is unaware of one option out of, say, three. This blockage reduces the probability of the unaware option’s selection by 0.33 to zero, while, at the same time increasing the probability of selection of the alternatives by 0.17 to 0.5 each, due to the same blockage. The comparative evaluation of the two remaining options adds a separate adjustment again. To accommodate these separate impacts of sufficient identification and comparative evaluation, the final term of the last equation needs to be partitioned to show the role of each. Again, the model is of the individual respondent with respect to all the options considered.

$$\sum_{i=1}^{O} P(O_i) = \sum_{i=1}^{O}\left(\frac{1}{\sum O_i} + \left(\frac{S_i}{\sum S_i} - \frac{1}{\sum O_i}\right) + \left(E(O_i) - \frac{S_i}{\sum S_i}\right)\right) = 1$$

The three terms to the right of the first equals sign account for opportunity, sufficient identifications (blockage), and comparative evaluations, respectively. Here, the term ***S*** refers to unblocked options. As in the previous models, the sum of ***O*** is simply a count of the options in the set while the sum of ***S*** is the count of unblocked options. S_i is unity when an option is unblocked and zero if blocked. ***E*** refers to the respondent's evaluation of an option's selectability.[2] The value of the evaluation is either one, zero or a probability.

Here is an example showing the component results for each of four options for a single individual, with the first two options blocked, and the other two evaluated with the last selected. Such component results for each option are added across the sample to provide the aggregate results.

Option 1: 0.00 = 1/4 + (0/2 – 1/4) + (0 – 0/2) = ¼ - ¼ + 0
Option 2: 0.00 = 1/4 + (0/2 – 1/4) + (0 – 0/2) = ¼ - ¼ + 0
Option 3: 0.00 = 1/4 + (1/2 – 1/4) + (0 – 1/2) = ¼ + ¼ - ½
Option 4: 1.00 = 1/4 + (1/2 – 1/4) + (1 – 1/2) = ¼ + ¼ + ½

It will be noted that blockage provides a boost for unblocked options while eliminating options that are blocked.

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[2] This may be either directly obtained or inferred from evaluative data such as ratings or rankings.

When the sum of ***S*** is set at a minimum of one, at least one option is assumed to be unblocked. When this is true the formula sums to unity for the case, and otherwise zero (when all options are blocked). A sample that contains cases for whom all options are blocked will fall short of accounting for 100% of shares by the proportion of such cases. The only situation where all options can be blocked is when the choice is "forced" - there is no residual option - and the respondent is unable or unwilling to make a selection e.g. if the respondent is unaware of all the options. Indeed, the residual proportion of such cases may be said to have chosen the residual option.[3]

This caveat apart, it is important to recognise that the model only accounts for the effects of blockages identified as such. Blockages of interest may vary from study to study. A blockage not explicitly accounted will not be counted as a blockage. It will necessarily fall within the comparative evaluation component of the model. In other words, while the model will always be mathematically complete, its explicit representation of all the blockage effects depends on their overt inclusion. And when incomplete, the category of “comparative evaluations” may be more accurately described as variation unaccounted for by the sources of blockage explicitly included.

The standard error for blockage of an option is the se of a proportion for the sum of the first two terms aggregated over a sample for the option and averaged. The standard error for comparative evaluation is the se of a proportion for the sum of all three terms.

Note that it is not necessary to have evaluation data to perform an analysis of blockage effects where only blockage data is available. All options that can be evaluated are simply defined as options that are not blocked. Since data for the first two terms on the right hand of the equation are available, the blockage components can be calculated. This is readily extended to different types of blockage.

A SIMPLE EXAMPLE

The example data in Table 1 shows the options blocked or selected within a selection set for four cases. The results of analysis are shown in Tables 2 to 5. The tables progressively elaborate the blockage effects. The differential impacts of both blockage and evaluations are clearly substantial.

Table 2 shows the component contributions of blockage and evaluation effects to option shares. Table 3 shows how the effects of all sources of blockage measured are made up of negative and positive blockage effects. The totals column provides measures of the overall scale of each type of effect. Table 4 shows a sub-analysis for unawareness effects while Table 5 presents the results for unavailability. Jointly they sum to Table 3.

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[3] The term “residual option” refers to “none of the other alternatives” i.e. a category that is exhaustive of all other possible choices.

Table 1: Hypothetical blockage and evaluation data

	Option 1	Option 2	Option 3	Option 4
Case 1	Unaware	Unavailable	Unaware	Chosen
Case 2	Chosen	Not Chosen	Not Chosen	Not chosen
Case 3	Chosen	Unaware	Unavailable	Not chosen
Case 4	Not Chosen	Unavailable	Chosen	Not chosen

Table 2: Component contributions analysis of total shares

	Option 1	Option 2	Option 3	Option 4	Totals
Base model shares	25.0%	25.0%	25.0%	25.0%	100.0%
Blockage effects	+2.1%	-18.8%	-10.4%	+27.1%	0.0%
Evaluation effects[4]	+22.9%	-6.3%	+10.4%	-27.1%	0.0%
Option shares	50.0%	0.0%	25.0%	25.0%	100.0%

Table 3: Component contributions of blockage effects to shares

	Option 1	Option 2	Option 3	Option 4	Totals
From blockage of option	-6.3%	-18.8%	-12.5%	0.0%	-37.5%
From blockage of alternatives	+8.3%	0.0%	+2.1%	+27.1%	+37.5%
Share impacts of blockage	+2.1%	-18.8%	-10.4%	+27.1%	0.0%

[4] It will be observed that the evaluation effects for Option 4 would result in a negative percentage if added to the base. But evaluation effects are conditional on blockage which should be added first.

Table 4: Share impacts by blockage - Unawareness

	Option 1	Option 2	Option 3	Option 4	Totals
From blockage of option	-6.3%	-6.3%	-6.3%	0.0%	-18.8%
From blockage of alternatives	+3.1%	0.0%	0.0%	+15.6%	+18.8%
Share impacts of unawareness	-3.1%	-6.3%	-6.3%	+15.6%	0.0%

Table 5: Share impacts by blockage - Unavailability

	Option 1	Option 2	Option 3	Option 4	Totals
From blockage of option	0.0%	-12.5%	-6.3%	0.0%	-18.8%
From blockage of alternatives	+5.2%	0.0%	+2.1%	+11.5%	+18.8%
Share impacts of unavailability	+5.2%	-12.5%	-4.2%	+11.5%	0.0%

EXAMPLE ANALYSIS FROM THE 2005 NEW ZEALAND ELECTION

A major component of the 2005 New Zealand Election Study (Vowles, et al 2011) was a post-election survey with questionnaires sent by post to several thousand eligible New Zealand voters. The survey analysis file contains data on the 3,743 respondents. The structure of the sample is complex, consisting of rolling panels from previous elections and disproportionate sampling of the Maori population in addition to new sample elements. The application of weights is required to yield results representative of the New Zealand electorate. The analysis below includes those who voted during the election (n = 3,443). Only those parties achieving parliamentary representation as a result of the election are covered in the tables. The electoral system is MMP, a form of proportional representation.

Blockages to any party's selection amongst the voters include lack of awareness or unfamiliarity with a party's people, policy or performance, and, exclusion or elimination of a party as not worthy of consideration. The survey data provides an indirect method for assessing their influence on voting via party liking. Individual party liking was measured using a bipolar 11-point scale ranging from strongly dislike (0) to strongly like (10), with indifference rated at 5. These ratings were used to infer selections of most liked parties. The alternatives to providing a rating of liking included "don't know" and "didn't say" (no response) to each party rating. Such responses may be interpreted, respectively, as:

1. Unfamiliar i.e. insufficient familiarity to consider party.
2. Ignored i.e. excluded or eliminated from consideration.

Either response meant that the party concerned would not be considered for selection. Table 6 shows the separate contributions for the two blockages. The frequencies range from 2.1% for Labour to 20.9% for the Progressive Party.

Table 6: Percentage of voters unfamiliar with or ignoring each party

	Labour	National	Greens	NZ First	United Future	ACT	Prog-ressive	Maori Party
Unfamiliar	0.8%	1.1%	5.2%	4.8%	11.9%	9.3%	18.5%	9.5%
Ignored	1.3%	1.4%	2.3%	2.4%	3.0%	2.4%	2.4%	1.6%
Totals	2.1%	2.5%	7.5%	7.2%	14.9%	11.7%	20.9%	11.2%

The joint contributions of these blockages and evaluation effects for each of the parties are shown in Table 7.

Table 7: NZ voter component contributions to total shares

	Labour	National	Greens	NZ First	United Future	ACT	Prog-ressiv	Maori	
Base shares	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	100.0%
Blockage	2.2%	1.9%	-0.0%	0.2%	-1.5%	-0.9%	-2.4%	-0.6%	-1.2%
Evaluation	19.3%	20.5%	-4.8%	-6.3%	-6.7%	-8.3%	-6.6%	-7.2%	-0.0%
Total shares	34.0%	34.9%	7.6%	6.4%	4.3%	3.3%	3.5%	4.7%	98.8%

Table 8 shows the losses and gains between options on account of both sources of blockage. The table shows that 8.6% points were lost amongst the parties and the same amount gained amongst them. This means that just under one in ten votes was decided differently on account of these sources of blockage. While all parties are affected, National and Labour make disproportionate gains and United Future and Progressive Parties make disproportionate losses. Labour and National each gain about 2% points from blockage associated with insufficient familiarity or ignoring alternative parties.

Table 8: Percent changes in shares on account of voter blockages

	Labour	National	Green	NZ First	United Future	ACT	Prog-ressive	Maori Party	Totals
Blockage of all options[5]	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-1.2%
From blockage of option	-0.1%	-0.2%	-0.8%	-0.7%	-1.7%	-1.3%	-2.5%	-1.3%	-8.6%
From blockage of alternatives	+2.5%	+2.2%	+0.9	+1.1%	+0.3%	+0.5%	+0.2%	+0.8%	+8.6%
Total impacts	+2.2%	+1.9%	-0.0%	+0.2%	-1.5%	-0.9%	-2.4%	-0.6%	-1.2%

Table 9 shows the contributions from each source of blockage. While the impacts shown in Tables 8 and 9 seem relatively small, differences between the results for parties are significant to $p<.001$ assessed by one-way anovas of the blockage coefficients.

Table 9: Percent changes in shares on account of two blockage sources

	Labour	National	Greens	NZ First	United Future	ACT	Prog-ressive	Maori Party
Unfamiliar	+1.8%	+1.6%	+0.2%	+0.3%	-1.2%	-0.7%	-2.2%	-0.6%
Ignored	+0.4%	+0.3%	-0.2%	-0.2%	-0.3%	-0.2%	-0.2%	0.0%
Totals	+2.2%	+1.9%	0.0%	+0.2%	-1.5%	-0.9%	-2.4%	-0.6%

ANALYTICAL SOFTWARE

A freeware Excel program, called Choice Components Analysis, is available for performing evaluative and blockage analysis, including analysis of different sources of blockage, and outputting coefficient arrays for cases. (Gardner, 2011)

CONCLUSIONS

Using the methods described here it is possible to execute an integrated analysis of the contribution of blockages, on the one hand, and evaluations, on the other, to

[5] The –1.2% of losses from all options refers to those voters who were unfamiliar with or ignored all eight parties shown in the table

selections amongst options. Furthermore, for each type of blockage it is possible to assess both the scale and direction of impacts on selection shares and how these effects are distributed between options. In addition, the methods provide means by which the different sources of these contributions may be further analysed across samples without the “missing” data attrition commonly attributed to “don’t know” and other reasons for blockage.

Before applying these procedures it is of great importance to consider the nature of the selections which respondents are to evaluate, the relevant range of options to be considered, including whether the selection set is to be open or closed, the measurement model to be applied, the range of blockages to be specified for data collection and analysis, and the development of questionnaire procedures by which this data can be effectively and efficiently collected.

REFERENCES

Ajzen, Icek "Nature and operation of attitudes" in Annual Review of Psychology pp27-58, Annual Reviews, 2001

Ajzen, Icek and Martin Fishbein "Understanding attitudes and predicting social behavior" Prentice-Hall, Inc, Inglewood Cliffs, New Jersey, 1980

Bunge, Mario "Causality: the place of the causal principle in modern science" Meridan Books, Cleveland, 1963

East, Robert "Changing consumer behaviour" Cassell, London, 1990

East, Robert "Consumer behaviour: Advances and applications in marketing" Prentice Hall, London, 1997

Evans, Jonathan St. B.T. "In two minds:dual-process accounts of reasoning" TRENDS in Cognitive Sciences, Vol.7 No.10 October 2003: 454-58

Fishbein, Martin and Icek Ajzen "Belief, attitude, intention and behavior" Addison Wesley, Reading, Mass 1975

Gardner, Winston, "Choice Components Analysis", 2011 A freeware Excel program add-in for analysis of evaluations and blockage. Accessed December 30, 2011. (http://www.ResearchOnChoice.com)

Marder, Eric "The laws of choice: predicting customer behavior", 1997, The Free Press, New York

Meager, Nigel, Claire Tyers, Sarah Perryman, Jo Rick and Rebecca Willison, "Awareness, knowledge and exercise of individual employment rights" 2002. Accessed November 24, 2006), (http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED475333)

Panagakis, Nick "Incumbent Races: Closer Than They Appear" in February 27, 1989 edition of The Polling Report. (http://www.pollingreport.com/incumbent.htm)

Vowles, Jack et al "The New Zealand Election Study" Accessed December 30, 2011. (http://www.nzes.org)