An improved approach to community segmentation as the foundation for environmental behavioural change communications

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Community segmentations based on environmental attitudes have traditionally adopted a continuum approach, for example 'Deep Green' to 'Deep Brown'. Using this approach as the basis to develop targeted messaging for behavioural change programs assumes a positive relationship between environmental attitudes and behaviours and that motivation for undertaking pro-environmental behaviours is consistent across the population. In fact, research has consistently shown the link between pro-environmental attitudes and behaviours is weaker than expected and these behaviours are not necessarily the result of environmental motivations. Further compromising the accuracy and usefulness of the traditional approach to environmental attitudinal segmentations is the evidence that self-reported pro-environmental attitudes have become socially desirable attitudes. Ipsos-Eureka has developed an alternative approach to environmental segmentations using two validated quantitative scales, the New Ecological Paradigm (NEP) and the Crowne Marlowe Social Desirability scale, in combination with a series of intervening factors when it comes to assessing environmental attitudes and behaviours. This paper outlines a comparison of this new approach with the traditional approach, in terms of the strength of the outcomes and the potential of each to form the basis of effective behavioural change campaigns.

Keywords: Community engagement, planning

With environmental issues occupying a prominent place in the policy agenda globally, significant effort has been invested in understanding and measuring levels of environmental concern to develop effective behavioural change communications. Environmental issues are often deeply polarising, due to current environmental problems being less directly observable than the most prominent ones in the past, complex in origin and global in scope. This results in a broad range of attitudes present in a single community. Accurately understanding this range of attitudes is crucial in developing effective targeted behavioural change campaigns.

Traditional approach and its inherent problems

Audience segmentations are an accepted approach to identify quantitatively groups with like attitudes or behaviours within a community. A detailed understanding of the various segment groups allows for the development of specifically targeted communications strategies to achieve a desired objective, rather than a generalist approach that may only resonate with a portion of the population.

When attempting to segment a community based on environmental attitudes, segmentations have traditionally adopted a continuum approach. For example, the development of three segments: Brown, Pale Green and Deep Green or Disengaged, Hesitant and Enthusiastic.

There are a number of problems associated with this approach.

Firstly, employing a continuum based attitudinal segmentation as the basis for developing behavioural change campaigns presumes the existence of a positive link between attitudes and behaviours. There is a significant body of research that illustrates a lack of attitudinal – behavioural consistency when it comes to the environment.[i] This attitude – behaviour gap presents challenges for decision-makers and social researchers. The essence of the problem is this: how useful is a community survey of attitudes, if attitudes have little ability to predict behaviour? Not only is this issue important for the implementation of programs (it may lead to an overestimation of people's willingness to comply), it also has an important implication for policy development (the introduction of policies based on broad attitudes may not be met with resounding community appreciation).

Another issue with the attitudinal continuum approach is the multitude of drivers for seemingly pro-environmental behaviours. Conducting a survey of community attitudes which segments the audience into 'Brown', 'Pale Green' and 'Deep Green' presumes each individual is driven by environmental motivators. Pro-environmental behaviours have become so many and varied that they are not necessarily driven by pro-environmental attitudes. Consider the following set of seemingly pro-environmental behaviours: cycling instead of driving; planting a vegetable garden instead of shopping at Coles for vegetables; and using organic shampoo and conditioner instead of chemical based products. In the context of a community survey it would be easy to presume these attitudes indicate a pro-environmental mindset however they could alternately be driven by reasons of speed, convenience, health, recreation or cost.

Finally, the attitude – behaviour gap may also suggest that social desirability plays a role in self-reported environmental attitudes. There are obviously strong opponents of the pro-environmental mindset, as evidenced in the recent shifts in the strength of climate change belief and apparent success of the deniers claim climate change is not human induced. Even so, openly admitting to disinterest or anti-environmental attitudes may be challenging for less engaged sections of the population. This potential degree of overstatement of pro-environmental attitudes needs to be considered in interpreting research results.

Behavioural segmentations attempt to avoid these pitfalls and also tend to adopt a continuum approach that can be summarised as either ranging from 'Many behaviours' to 'Few behaviours' or 'No behaviours' or segment based on frequency, such as 'All the time' to 'Never'. While this approach does circumvent many of the issues associated with environmental attitudinal segmentations, concentrating purely on behaviour does miss much of the detail captured by examining attitudes and may not adequately understand motivations for behaviour, making developing targeted communications difficult.

The revised approach and its advantages

Ipsos-Eureka set out to develop an approach to environmental segmentation that overcame as many of the issues described as possible.

To address the attitude – behaviour gap we introduced the New Ecological Paradigm (NEP) scale as the attitudinal basis of our segmentation. The NEP was initially published by Dunlap and Van Liere in 1978 and has since been revised in 2000.[ii] This scale was chosen for its apparent extension beyond a measure of environmental concern to a measure of ecological consciousness (or an investigation of views about nature and humans' relationship to it). A growing acknowledgement that humans are altering ecosystems upon which we are all dependent suggests an evaluation of ecological consciousness is more appropriate than merely environmental concern.

The scale attempts to scores audiences across five dimensions of ecological consciousness: belief in the fragility of nature, anti-anthropocentrism, rejection of human exceptionalism, the existence of limits to growth for human societies and the possibility of an eco-crisis. A series of studies have been conducted that validate the predictive abilities of NEP to predict environmental belief systems.[iii] In short, a tendency to provide high scores on the NEP scale should lead to a set of pro-environmental beliefs and values. Furthermore, these beliefs may influence behaviour, and there is evidence of relationships between the NEP Scale and various types of self-reported and observed behaviours. However, real or perceived constraints in relation to carrying out pro-environmental behaviours do question the strength of the causal link between a strong NEP-behaviour relationship.[iv] Segments based on the NEP do not necessarily ladder to behavioural assumptions, making a close examination of specific reported behaviours and their drivers critical.

Ambiguity in relation to drivers of pro-environmental attitudes and behaviours has traditionally been a problem in terms of fully understanding segmentations. The Ipsos-Eureka approach acknowledges drivers are likely to vary for individual behaviours. However, too much attitudinal specificity prevents drawing conclusions at an overall level. An approach investigating the drivers for behaviours at a sub-category level (transport, food and shopping, energy and water usage, waste and recycling) was developed which supported the analysis of behavioural drivers in far more detail. For example, the transport behaviour investigated included using public transport instead of driving, walking or cycling instead of driving, driving in a fuel efficient manner and purchasing a hybrid or more fuel efficient vehicle. Rather than investigating the individual drivers and barriers to each of these behaviours, the study investigated drivers and barriers for the transport behaviours collectively.

In an attempt to account for any levels of social desirability influencing outcomes an additional validated scale, the Crown Marlow social desirability scale, was included.[v] This measure is designed to identify members of the audience who are likely to provide socially desirable responses to any line of investigation, environmental or other. If a strong correlation between the segments and social desirability was identified, these participants could be either excluded or analysed within that context.

Finally, the approach included a series of other intervening variables with potential to understand further the segments. The degree of control or perceived ability to undertake a behaviour is often considered a key barrier, breaking the relationship between attitude and behaviour (particularly for mid to high level cost of entry behaviours). For example, a strongly ecologically conscious individual who rents a small apartment and is as a result unable to change light bulbs, install solar hot water heating or grow vegetables may feel unable to act on their beliefs. Degree of perceived ability was captured at the same behavioural sub-category level (transport, food and shopping, energy and water usage, waste and recycling) in order to gather a greater level of behavioural and motivational specificity. Reported levels of willingness across these sub-categories were also investigated to examine the relationship between perceived ability and willingness – potentially a key influencer in designing intervention programs.

The final set of intervening factors included critical environmental experiences or life transitions based on the hypothesis that these experiences and transitions may have some bearing on changed environmental behaviours.[vi] These measures included: having a child in past 12 months; becoming a grandparent in past 12 months; personally or a member of the immediate family experiencing serious illness past 12 months; and having to alter lifestyle due to water restrictions in the past 12 months.

The study

The survey was conducted online between 1 and 8 May 2010 with a nationally representative sample of the Australian population aged over 18. Sample A and B comprised n=525 and n=528 participants respectively.

To test the strength and applicability of the traditional segmentation approach versus Ipsos-Eureka's experimental design we designed an online survey comprising the two alternate attitude batteries. Details of the questionnaire structure can be found overleaf:

SAMPLE A n=525	SAMPLE B n=528
NEP attitudinal battery (basis of sample A segmentation)	Traditional attitudinal battery to measure environmental concern (basis of sample B segmentation)
Transport behavioural investigation: • Current behaviours & future intentions • Drivers & barriers • Overall effort, perceived ability & willingness	Transport behavioural investigation: • Current behaviours & future intentions • Overall effort, perceived ability & willingness
Food and shopping behavioural investigation: • Current behaviours & future intentions • Drivers & barriers • Overall effort, perceived ability & willingness	Food and shopping behavioural investigation: • Current behaviours & future intentions • Overall effort, perceived ability & willingness
Energy and water usage behavioural investigation: • Current behaviours & future intentions • Drivers & barriers • Overall effort, perceived ability & willingness	Energy and water usage behavioural investigation: • Current behaviours & future intentions • Overall effort, perceived ability & willingness
Waste and recycling behavioural investigation: • Current behaviours & future intentions • Drivers & barriers • Overall effort, perceived ability & willingness	Waste and recycling behavioural investigation: • Current behaviours & future intentions • Overall effort, perceived ability & willingness
Additional attitudinal measures: • Belief in human induced climate change • Ability to make a difference to the environment • Interest to learn more about reducing environmental impact • Willingness to pay a premium for environmentally friendly products • Advocacy among family and friends • Sense of shared responsibility for environmental problems • Overall degree of environmental concern	
Social desirability measures	
Critical environmental experiences or life transitions	
Demographics	

The results

Cluster Analysis was employed to develop a four cluster solution for both samples. Discriminant Analysis was then used to examine the extent to which the models successfully classified respondents when all statements were included. The results of this analysis revealed that when each respondent was classified using the results of all other respondents (i.e. leave-one-out classification), 89.1% of respondents in Sample A were correctly classified and 91.3% of respondents in Sample B were successfully classified. This, of course, is not a measure of the utility of the model; it simply shows that the statements can be used to predict segment membership.

The segmentation based on the traditional environmental concern statements can be described as follows:

SAMPLE B SEGMENTATION (DERIVED FROM TRADITIONAL ENVRIONMENTAL CONCERN STATEMENTS)		
Deeply Engaged & Willing to Pay For It n=166 31%	A fully engaged and knowledgeable segment (self-reported). This group are very likely to believe they personally contribute to the problem of climate change and that they will be affected within 5 years. They demonstrate a high level of desire for industry and government to do more to address environmental issues and are highly likely to be currently actively reducing their impact on their environment, although see room to do more.	↓ Less likely to be unsure or a non-believer in human induced climate change ↑ More likely to strongly agree they can personally make difference to the environment ↑ More likely to strong agree they are interested to know more about how they can reduce their environmental impact ↑ More likely to strongly agree they are prepared to pay more for environmentally friendly products ↑ More likely to strongly agree they often talk to family and friends about how they can help the environment

SAMPLE B SEGMENTATION (DERIVED FROM TRADITIONAL ENVRIONMENTAL CONCERN STATEMENTS)		
Deeply Engaged but Price Sensitive n=138 26%	An equally engaged segment, who identify themselves as lacking in knowledge but are interested to know more. This segment is also very likely to believe they personally contribute to the problem of climate change and that they will be affected within 5 years. Like *Deeply Engaged & Willing to Pay For It* they demonstrate a high level of desire for industry and government to do more to address environmental issues and also likely to be actively reducing their impact on the environment. The differentiating characteristic of this segment is they are very price sensitive.	↑ More likely to strong agree they are interested to know more about how they can reduce their environmental impact ↓ Less likely to strongly agree they are willing to pay more for environmentally friendly products
Unsure n=142 27%	This segment is sitting on the fence in terms of many of their attitudes. They are less likely to believe they will be affected by climate change within 5 years and demonstrate a weak belief in their personal contribution to the problem. They are more likely to have low levels of reported knowledge regarding how to improve the natural environment. Interestingly, this group are the most likely to believe they are doing all they can to reduce their impact on the environment, reflecting their low levels of willingness to uptake environmental behaviours.	↑ More likely to be unsure about the existence of human induced climate change ↑ More likely to be unsure about their potential to personally make a difference to the environment
Disengaged n=82 16%	Environmental concerns are not on the radar for this segment. They are least likely to believe they will personally be affected by climate change within 5 years, they demonstrate low levels of belief they personally contribute to the problem of climate change and have the lowest desire for industry and government to do more to address environmental issues.	↑ More likely to disbelieve in the existence of human induced climate change ↑ More likely to strongly disagree they can personally make a difference to the environment ↑ More likely to strongly disagree they are interested to know more about reducing their environmental impact ↑ More likely to strongly disagree they are willing to pay more for environmentally friendly products ↑ More likely to strongly disagree they often talk to family and friends about how they can improve the environment

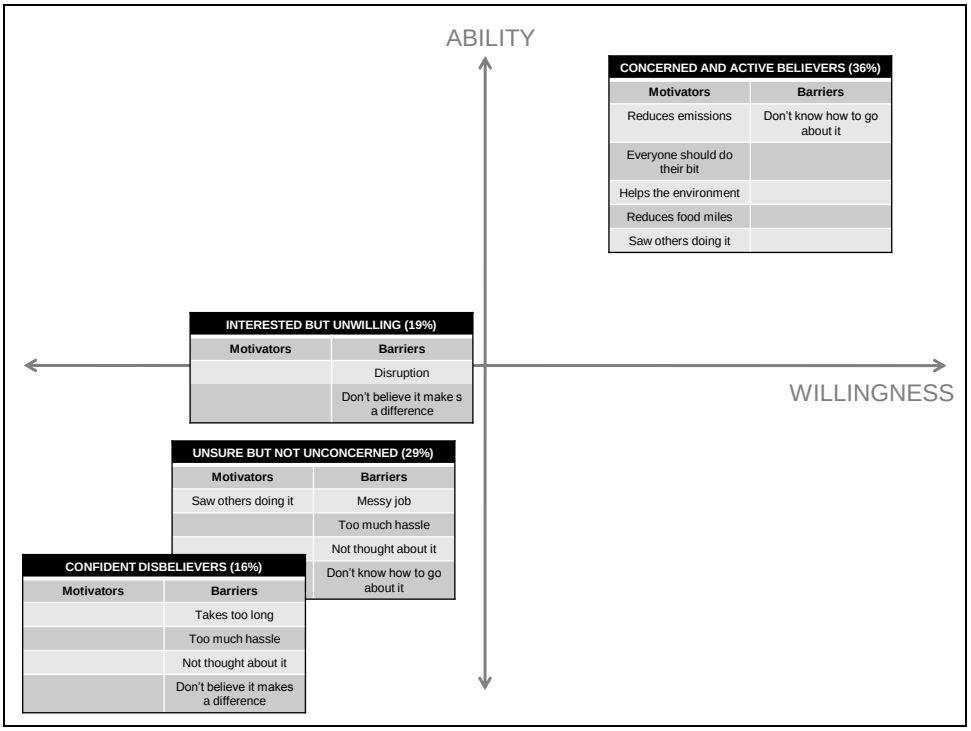
While this continuum approach to segmentation does convey the range of attitudinal perspectives among the audience, critical to the analysis is there is no correlation between attitudes and reported effort across the behavioural categories of transport, food and shopping, energy and water usage, waste and recycling. In addition, no significant differences emerged by segment according to reported levels of ability or willingness. These findings suggest there is a low level of attitudinal – behavioural consistency associated with this segmentation. This finding, combined with no indication of drivers and barriers to the uptake of pro-environmental behaviours, makes developing effective behavioural change communications based on this segmentation very difficult.

The segmentation based on the NEP Scale, to assess an ecological consciousness is described below:

SAMPLE A SEGMENTATION (DERIVED FROM NEP ATTITUDINAL STATEMENTS)		
Concerned and active believers n=189 36%	This segment demonstrate strong concern about an impending eco-crisis, they show strong belief in the fragility of nature's balance and have a strong sense of the limits to human population growth. This group strongly reject the idea that humanity has a right to prevail over other species and doubt the human capacity to prevail over the power of nature.	↑ More likely to believe in the existence of human induced climate change ↑ More likely to strongly agree they are interested to know more about reducing their environmental impact ↑ More likely to strongly agree they are willing to pay more for environmentally friendly products ↑ More likely to strongly agree they often talk to family and friends about how they can improve the environment ↑ More likely to strongly agree they feel jointly responsible for the current set of environmental problems ↑ More willing to adopt pro-environmental behaviours in all categories ↑ More likely to expend more effort in relation to pro-environmental behaviours in all categories except transport ↑ More likely to have had a child in the past 12 months ↑ More likely to have had to adjust their lifestyle due o water restrictions
Interested but unwilling n=100 19%	This segment demonstrates a concerned ecological worldview, although they appear to believe it is not the result of humans. They have a reasonably strong belief in the fragility of nature's balance and in an impending eco-crisis, but they have a very strong sense of humanity's capacity to overcome ecological issues. Interestingly they are more likely to reflect low levels of willingness to adopt pro-environmental behaviours.	↑ More likely to disbelieve in the existence of human induced climate change ↓ Less willing to adopt pro-environmental behaviours in all categories
Unsure but not unconcerned n=154 29%	This segment is more likely to be unsure about the possibility of an eco-crisis, as well as several other attitudes. They report relatively low levels of belief in the fragility of nature's balance and the idea there are limits to human population growth. They have the strongest sense of humanity's right to prevail over other species.	↑ More likely unsure regarding their willingness to pay more for environmentally friendly products ↑ More likely to be unsure whether they feel jointly responsible for the current set of environmental problems ↓ Less willing to adopt pro-environmental behaviours in all categories
Confident disbelievers n=86 16%	This group are more likely to disbelieve we are experiencing or expecting an eco-crisis. They display low levels of belief in nature's fragility and in the idea there are limits to human population growth. They are more likely to believe humanity should and could prevail should we face a crisis.	↑ More likely to be aged 18-29 ↑ More likely to disbelieve in the existence of human induced climate change ↑ More likely to strongly disagree they are interested to know more about reducing their environmental impact ↑ More likely to strongly disagree they are willing to pay more for environmentally friendly products ↓ Less willing to adopt pro-environmental behaviours in all categories

The literature suggests the NEP Scale potentially taps primal beliefs about the nature of the earth and humanity's relationship with it and this segmentation supports that finding. The higher level of correlation with a series of intervening attitudinal factors, critical environmental experiences or life transitions, and overall willingness and effort in relation to pro-environmental behaviours suggests those primal beliefs also inform these factors.

This segmentation can be further explained by examining levels of willingness compared with ability and the reported motivators and barriers to uptake of pro-environmental behaviours.



Intriguingly, the *Interested but Unwilling* segment demonstrates a high level of engagement with environmental concerns although their tendency to disbelieve in man-made climate change could explain their simultaneously low levels of willingness to adopt pro-environmental behaviours. While *Confident Disbelievers* and *Unsure but Not Unconcerned* report low levels of perceived ability to carry out pro-environmental behaviours, their reported barriers suggest perceived ability is influenced by their ecological worldview, rather than their financial or practical context.

Comparing the two segmentations, the multi-dimensionality of the NEP Scale provides a deeper picture of the segments versus the traditional environmental concern statements. In addition, when you compare the use of the intervening factors a richer picture emerges and provides insight into the drivers and barriers to various behaviours. No trend in levels of social desirability was present in either segmentation.

Applications of the revised approach

If decision makers are to be effective in developing environmental policy, they must accurately perceive where the community stands with regard to environmental issues. The revised segmentation approach provides a fuller understanding of each segment's drivers, barriers, and willingness to adopt pro-environmental behaviours and suggests a stronger attitudinal – behavioural link, thereby providing insight into considerations that may alter supportive or oppositional orientations to a given set of environmental policies. This approach is important in order to gain an understanding of environmental issues and then to

solve environmental problems. This is just as true in the field of environment and conservation as it is in the fields of public health or road safety where the need for good stakeholder understanding is beyond question and research and evaluation are seen as necessary components of any policy initiative.

The segments derived using the revised segmentation approach, *Concerned and Active Believers*, *Interested but Unwilling*, *Unsure but not Unconcerned* and *Confident Disbelievers* differentiate based on attitudes, willingness and reported behaviours and therefore four distinct campaign strategies and/or policy instruments may be required to achieve the desired behavioural changes across the population. For example, *Confident Disbelievers* would be unlikely to respond to any environmental focused messaging. For this attitudinal mindset, changing behaviour would not necessarily require a prior change in knowledge or attitudes. A coercive policy instrument such as statutory or regulatory prescription may be required to cast the desired behavioural change as a social norm, that is, repositioning the behaviour as something people simply do, rather than an overtly 'environmental' behaviour. Alternatively, signalling and incentive strategies may be appropriate to encourage behavioural change.[vii] While these policy instruments are not unsuitable for *Concerned and Active Believers,* it may be argued that given this segment would likely respond to messaging regarding the collective wellbeing of their community, the addition of an organisational policy strategy such as community coordination or participatory approaches may further enhance behavioural outcomes.

Conclusion

The comparison of the two approaches to environmental attitudinal segmentation has delivered some interesting findings regarding attitudinal and behavioural consistency and understanding attitudinal sets within the context of perceived ability and control. This increasingly dimensionalised understanding of the segments certainly may provide a stronger basis for developing environmental behavioural change communication strategies and policies. While the NEP Scale attempted to broaden understanding from environmental concern to an ecological worldview, an even broader view of attitudes, taking in concepts of sustainability and institutional trust may be next step in fully understanding attitudinal orientation, considering environmental attitudes a subset.

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