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Identifying climate change interpretive communities in a large Australian sample

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ABSTRACT

Australians vary considerably in their beliefs and responses to climate change, and addressing this diversity is an important challenge faced by climate change communicators. This study used audience segmentation analysis to identify the main climate change interpretive communities within Australia. A nationwide sample consisting of 3096 residents (aged 15–108 years, 47% male and 53% female) completed an online survey assessing a broad range of cognitive, affective, and behavioural constructs related to climate change. Latent profile analysis applied to the psychological variables suggested that this Australian sample consists of five distinct interpretive communities: *Alarmed* (26%), *Concerned* (39%), *Uncertain* (14%), *Doubtful* (12%), and *Dismissive* (9%). Validation analyses revealed that these groups differed in their: (1) behavioural responses to climate change, (2) consumption of climate change related media, and (3) preferences for energy policies. Recommendations are presented for developing more effective climate change communications by tailoring and targeting communications to specific interpretive communities.

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1. Introduction

Recent surveys indicate that Australians vary substantially in their understandings and responses to climate change challenges (Ashworth, Jeanneret, Gardner, & Shaw, 2011; Leviston & Walker, 2010, 2011; Reser, Bradley, Glendon, Ellul, & Callaghan, 2012a, 2012b). To be optimally effective, climate change communication strategies should take this diversity into account and be tailored to specific audiences (Moser & Dilling, 2004; Whitmarsh, O'Neill, & Lorenzoni, 2011); for instance, messages that engage and elicit adaptive responses in environmental activists are unlikely to be effective for climate change deniers. Distinct groups require different strategies to elicit behaviour change (Rimer & Kreuter, 2006; Slater, Kelly, & Thackeray, 2006). In this paper, we describe a quantitative approach for segmenting members of a large, nationwide sample of Australians based on their values, attitudes, beliefs, and emotional responses to climate change. The analysis enabled us to generate an empirically-based typology that identified the main *interpretive communities* (Fish, 1980; Leiserowitz, 2007; Myers, Nisbet, Maibach, & Leiserowitz, 2012) in a large Australian sample — that is, groups that share similar views and understandings about climate change.

This segmentation exercise represents a starting point for further work aimed at developing more effective communication and behaviour change strategies to help Australians adapt to the challenges posed by global climate change. Adaptation has been defined as "adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2007, p. 27). This study focused on the human dimensions of adaptation to climate change, which include individual adjustments in psychological and behavioural responses; as processes, actions, or outcomes within a system (e.g., households, communities).

1.1. Previous audience segmentation research

Market segmentation has become a cornerstone of social marketing — a movement that applies marketing practices to change behaviour in ways that create net benefits for society (Kotler, Roberto, & Lee, 2002). A common starting point for most social marketing exercises involves understanding the motives, attitudes, and beliefs of one's target audience, and then identifying segments

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of like-minded individuals within the population of interest (Slater et al., 2006). Once an audience is segmented, interventions can be tailored to match each segment's psychographic profile. Audience segmentation research is often conducted by health scientists, focussing on how to develop and deliver behaviour change programs targeting a diverse set of health threats including: smoking, substance abuse, obesity, high cholesterol, and sexually transmitted disease (Lefebvre & Flora, 1988; Mathijssen, Janssen, van Bon-Martens, & van de Goor, 2012; Rimal et al., 2009). Segmentation has also been applied to examine population characteristics, such as ecological worldview, lifestyle, motivations, barriers, knowledge and engagement, to identify efficient ways to promote pro-environmental behaviours (DEFRA, 2008).

Climate change communication researchers increasingly recognise the utility of social marketing. Three studies have conducted segmentation analyses based on large, representative, national surveys. Ashworth et al. (2011) collected data from 1602 Australians in an online survey and conducted a cluster analysis on nine variables assessing knowledge and concern about climate change. Four distinct clusters emerged: (1) *Engaged* (27% of the sample, moderate to high knowledge and high concern), (2) *Concerned and Confused* (36%, moderate knowledge and moderate to high concern), (3) *Doubtful* (23%, moderate knowledge and low concern), and (4) *Disengaged* (15%, low knowledge and low to moderate concern). Cluster membership significantly predicted several outcome variables including: concern about the environment, expected climate change outcomes in Australia, support for a range of specific policy actions (e.g., placing a price on emissions, increasing prices for electricity and petrol, and improving infrastructure to adapt to climate change), perceived media bias in reporting about climate change, and desire to learn more about climate change.

Maibach, Leiserowitz, Roser-Renouf, and Mertz (2011) conducted a similar segmentation analysis on a nationally representative sample of 2164 U.S. residents. They applied latent class analysis to 36 variables assessing climate change beliefs, issue involvement, policy preference and behavioural responses. The analysis identified six distinct segments in the U.S. population: Alarmed (18% of the sample), Concerned (33%), Cautious (19%), Disengaged (12%), Doubtful (11%), and Dismissive (7%). After controlling for a range of demographic variables, including political orientation, segment membership explained unique variance in respondents' support for several greenhouse gas emission policies.

Maibach et al.'s (2011) data were collected in 2008. Subsequently, their research group collected five additional waves of data that have been used to monitor shifts across the six profiles over time (Leiserowitz, Maibach, & Roser-Renouf, 2010a; Leiserowitz, Maibach, Roser-Renouf, & Hmielowski, 2012; Leiserowitz, Maibach, Roser-Renouf, & Smith, 2010b, 2011; Yale Climate Change Project, 2009). Longitudinal analyses indicated that the percentage of alarmed and concerned respondents decreased substantially from 51% in 2008 to 39% in 2010, subsequently remaining relatively stable into 2012. Dismissive and Doubtful respondents (combined) increased from 18% to 29% from 2008 to 2010, but then decreased to 25% by 2012.

In a study designed to facilitate cross-nation comparisons, Morrison, Duncan, Sherley, and Parton (2013) applied Maibach et al.'s (2011) methodology, including the same set of profiling variables, to an online panel sample of 1927 Australians, representative of the general population in age and gender. They retained six profiles to match the American solution, although like Maibach's results, some statistical evidence suggested better fits for other potential solutions. They found that Australians in their sample were less polarised in their climate change views and behaviours than their U.S. counterparts, with fewer respondents in the Alarmed/Concerned (33%) groups, and more in the central Cautious/Disengaged groups (46%).

Together, the results of previous segmentation studies indicate that populations tend to comprise groups of individuals who share similar views and understandings about climate change, and that delineation of these groups is largely determined by the specific sets of variables used to create the segments. Therefore, selecting an appropriate set of segmentation indicators is a critical early step in designing an effective social marketing program.

Past segmentation studies have tended to focus on a relatively narrow set of psychological profiling variables such as climate change concern, knowledge, self-efficacy, and expected timing of negative impacts (Leviston & Walker, 2010; Maibach et al., 2011; Morrison et al., 2013). However, research related to environmental risk perceptions and pro-environmental behaviour suggests that a much broader range of cognitive and affective variables may underpin human responses to climate change threats. For example, assessments of perceived spatial proximity address the finding that individuals tend to underestimate the threat of environmental problems presented to their local region, but become increasingly more accurate as the focus becomes more global (Lima & Castro, 2005; Uzzell, 2004). Reser et al. (2012b) found that this phenomenon, known as environmental hyperopia, was considerably stronger in an Australian sample than in a British sample, despite evidence that Australia is likely to experience more severe climate change effects than Britain.

Other potentially useful profile variables include an emotional connection to nature, environmental identity, affective responses to climate change, and trust in climate change authorities. Strong connections with nature and a tendency to place environmental issues as an integral part of self and lifestyle have been associated with pro-environmental behaviours, including actions to address climate change (Hinds & Sparks, 2008; Kals, Schumacher, & Montada, 1999; Whitmarsh & O'Neill, 2010). Affective responses to the issue of climate change may also be an important element of climate change psychological profiles. Leiserowitz et al. (2010b) observed a tendency for self-reported emotional responses (e.g., afraid, guilty) to increase in strength across segments in line with the strength of climate change cognitions. A recent Australian study found that self-reported feelings of shame, guilt, fear, and anger about climate change were particularly strongly related to adaptive behaviours, and mediated the relationship between climate change belief and behaviour (Walker, Leviston, & Price, 2011). Additionally, trust in climate change authorities may be viewed as an important cognitive variable as it indirectly addresses source credibility (Earle, 2010). Individuals who tend to trust authorities who produce climate change communications are likely to report high levels of concern, self-efficacy, risk-perception, and adaptive behaviours about climate change (Reser et al., 2012a, 2012b).

The inclusion of this broader range of cognitive and affective variables in segmentation analyses will provide social marketers with more in-depth and complete understanding of the psychological drivers of adaptive and non-adaptive responses to climate change, which can be used to help them develop more effective engagement strategies.

1.2. Current study

Like previous climate change segmentation research, our study employed a large national sample with the aim of identifying homogenous subgroups for which climate change messages could be tailored and targeted. However, our study was not simply a replication; it extended research in this area in three important respects. First, relative to previous studies, we included a much broader range of psychological variables to create profiles and define our climate change interpretive communities. Whereas Ashworth et al. (2011) focused exclusively on climate change knowledge and concern,