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## **Sharks, Social Sentiment and Science**

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## Sharks, Social Sentiment and Science

### Abstract

This article is positioned within critical and strategic social marketing literature (Andreasen, 1995; Goldberg, 1995; Gordon, 2011, 2013; Gordon, Moodie, Eadie, & Hastings, 2010), which asserts the importance of conducting community-based research to gain insights that assist in strategic social program design (Andreasen, 2002; French & Gordon, 2015). Campaign design failures associated with 'top down' or 'expert led' approaches, have been linked to poor in-depth community research (French & Gordon, 2015, p.13). The policy design/implementation of New South Wales shark management strategy has been an example of a top down, expert driven implementation design strategy. The aim of this research is to demonstrate how a multi-method research design may assist in enhancing social program design and better inform policy makers, with the ultimate aim of a reduction in public risks of unprovoked shark encounters.

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*Sharks, Social Sentiment and Science*

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This article is positioned within critical and strategic social marketing literature (Andreasen, 1995; Goldberg, 1995; Gordon, 2011, 2013; Gordon, Moodie, Eadie, & Hastings, 2010), which asserts the importance of conducting community-based research to gain insights that assist in strategic social program design (Andreasen, 2002; French & Gordon, 2015). Campaign design failures associated with 'top down' or 'expert led' approaches, have been linked to poor in-depth community research (French & Gordon, 2015, p.13). The policy design/implementation of New South Wales shark management strategy has been an example of a top down, expert driven implementation design strategy. The aim of this research is to demonstrate how a multi-method research design may assist in enhancing social program design and better inform policy makers, with the ultimate aim of a reduction in public risks of unprovoked shark encounters.

*Background*

In the period 2014-2016 the state of New South Wales (NSW) experienced a succession of fatal and non-fatal shark encounters along the northern coastline. Under pressure to design effective shark management policy (Friedrich, Jefferson, & Glegg, 2014; McCagh, Sneddon, & Blache, 2015) the NSW state government held a shark symposium in Sydney. It hosted shark experts and key stakeholders from around the globe, with no community representation or consultation, and then

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announced a five year, \$AU16 million shark management strategy (SMS) (Pavey, 2016). The SMS was designed to mitigate the risk of shark encounters and improve the scientific understanding of sharks and shark encounters through humane and ecological practices (Pavey, 2016). The strategy considered a variety of elements, including new drones, helicopters, clever buoys, shark barriers, social media applications, education programs and smart drumlines (Pavey, 2016).

To better conceptualize the issue of shark encounters and mitigation solutions, NSW State (Pavey, 2016) and Federal governments (Whish-Wilson, 2017) both organized committees to explore this issue. Each report confirmed attitudes toward shark policy and implementation are complex, with community members expressing a variety of underlying reasons for approving or disapproving of particular policy and mitigation approaches. The Department of Primary Industries (DPI) Fishers also initiated a policy that required ecological, social and environmental impacts for each strategy to be assessed. This meant the SMS required a comprehensive exploration of community attitudes with regards to SMS and its implementation. Importantly, a considerable shift in policy was announced in October 2016, where the Premier of NSW committed to a mesh net trial for Ballina DPI, 2017). This caused community outcry (during our study) and reinforced the need for community consultation.

### *Discussion of the issue*

Consultation came in the form of a pre and post net trial online survey run by the Department of Primary Industries, Fishers (Department of Primary Industries, 2017). The limited nature of the survey and specific geographic focus did not allow for a deep understanding of the NSW beach and ocean user community. A problem with this approach according to Macnamara (2016) is that you only hear from the 'usual suspects', those highly affected or motivated, and the voice of the general community is not heard. To further their community understanding the DPI Fishers wished to explore other methods of community 'listening', to capture the attitudes related to sharks and the SMS of those considered 'grass roots' beach and ocean users. This paper describes the research project conducted in partnership with DPI Fishers.

### *Practical and Conceptual Implications*

The mix of methods included (1) focus groups/interviews – 14 in total ranging the entire length of the state; and (2) Sentiment analysis, which consists of exploring publicly available natural language in social media comments (Barry, 2014). Over 21200 Facebook and 17000 Twitter comments were analyzed.

Step 1: Locating data and familiarisation with socio-cultural context - Netnography is ethnography adapted to the study of online communities (Kozinets, 2002). (Kozinets, 2015) argues that the approach provides a means of research that is quicker, and less costly than traditional approaches. Further, it permits the exploration of natural language unbiased by the researchers. Importantly, it was used in this study to immerse the researcher in the online community's discussion of sharks and the SMS, as well social conventions, symbolisms, and meanings related to groups, shaped by affordances embedded in each social media site.

Step 2: Scope and data collection – Parameters of the study were established and appropriate data was collected. Geographic (NSW) boundaries were set, with a timeframe coinciding with the introduction of the first stage of the SMS.

Step 3: Data familiarisation and cleansing – This involved all authors reading and establishing an understanding of the data in relation to the scope of the study. Data that fit the scope was included, data outside set boundaries was discarded. In this instance data related directly to each SMS, and community views on sharks and preferred coexistence approaches. Importantly, steps 2 and 3 were applied multiple times as familiarity helps inform scope. This meant that surrounding themes could assist in explaining motivations and reasoning for attitudes and positions.

Step 4 Code development - The approach of Abductive reasoning (Walton, 2014) was employed to generate themes that accounted for the volume of data (social media and the interview/focus group transcripts). Themes developed in the social media analysis could be checked with the data from interview/focus groups, and vice versa. This forms an abductive multi-method design where both sets of results are compared if possible. The results from each method at times support the other; this is illustrated using grey and white arrows in Figure 1. In short, this study used sentiment analysis to explore community attitudes, help contextual framing and develop thematic codes, and assisted in framing and shaping focus group questions and areas of focus.

Step 5: Collaborative coding - Attitudes were assessed using Appraisal theory (Martin & White, 2005). Appraisal asserts opinions are segmented in affect, judgement and appreciation. *Affect* level analysis focus on emotions, accounts for un/happiness in/security and dis/satisfaction (Martin and White, 2005). *Judgement* analysis expressions related to how ab/normal, in/capable, un/dependable, un/trustworthy or im/moral a person, group, event or circumstance is perceived (Martin and White, 2005). *Appreciation* account for a person reaction, either positive or negative to a persons, event or circumstance; how well they perceived someone/something is composed and how in/valuable someone or something is in relation to an alternative (Martin and White, 2005).

Importantly, all data was collaboratively coded in accordance with Saldaña (2015), meaning both researchers reviewed and agreed on coding through a negotiated process. This process occurred three times throughout the process, first, when the social data was collected and parameters were being set. Second through the cleansing and thematic stages. Third when applying appraisal coding to sentiment data and focus groups. The third stage was repeated, with insights gained from social data applied to focus group data, and back to social data for purposes of consistency.

The implications of this study for social marketing theory and concepts are two-fold. Any theory of listening should not solely rely on a single method of community attitude exploration (Macnamara 2016). Using sentiment analysis with appraisal in assessing community attitudes provides a framework for understanding what people are feeling and why, and it assists in shaping additional approaches.

### *Lessons Learned and Recommendations*

Appraisal did not account for three emotions important to the context of this study, hope, despair and hostility, which were clearly expressed often online and in focus groups. These were added to our coding schedule to provide a more accurate and nuanced understanding of attitudes. We recommend that further projects tailor appraisal to suit particular contexts under study using Plutchik's (2001) wheel of emotion.

Importantly, using both research methods in parallel resulted in four advantages. First, conducting the cleansing process and familiarizing ourselves with the sentiment insights provided appropriate language to engage with participants in extended (focus group) discussions. This facilitated a targeted exploration of attitudes, associations and reasoning about the SMS and related topics. Second, sentiment analysis highlighted particular areas of contention and areas that were not well commented on in the social spaces; this guided some lines of inquiry for the focus group and interviews. Third, the method enhanced interpretation through the coding and analysis process, after the focus groups/interviews were completed. Finally, once the focus groups and interviews were complete, abduction was used to better inform analysis of the sentiment data. This meant the thematic analysis and coding was more nuanced and accurate, providing deeper and richer insights from the key target groups of interest to the DPI fishers.

It is the recommendation of this study that researchers exploring community attitudes and reasoning use compatible research methodologies in parallel, as insights from both can help inform each other. Further, collaborating coding bonds a research group (Saldana 2015) and improves inter-coder consistency. Importantly, it provides the research with a consistent lens for assessing and comparing different stages, and in doing so creates nuanced and rich insights.

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